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ABSTRACT

This course is intended for training health service managers, planners, and educators to apply the principles and methods of health manpower planning. It consists of 12 half-day sessions and is for use in a group learning setting such as a workshop or seminar. Each session contains the following: a summary of content; statement of the specific educational objectives of the session; the session structure; learning materials, including practical examples, covering the topic area directly linked to the educational objectives; reference list of additional background reading; and work exercises. Evaluation instruments provided are a pre-course questionnaire, daily evaluation of the session covered, and end-of-course questionnaire. Session topics are (1) Health Manpower Planning; (2) Ten Steps to Health Manpower Planning; (3) Health Manpower Situation Report on Existing Manpower and Services; (4) Future Supply of Manpower; (5) Manpower Requirements--Quantity, Quality, and Distribution; (6) Mismatches between Supply and Requirements; (7) Solving Mismatches; (8) Organizational and Management Problems; (9) Manpower Strategy and Outline Plan; (10) Detailed Health Manpower Development Plan; (11) Implementation and Monitoring; and (12) Concluding Session. An annotated bibliography cites 61 references on manpower planning activities applicable to developing countries. (YLB)

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GUIDELINES
FOR
HEALTH MANPOWER PLANNING

A COURSE BOOK

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Note: For convenience during the course, the Learning Materials and the Exercises have been given a distinct pagination within each Session. Session 6, for instance, runs from page 165 to page 188; within that span, the pages with the Learning Materials and Exercises will be seen to carry the dual paginations 171-186 and 6.1-6.16.

ACKNOWLEDGEMENTS

A great contribution to the preparation of these guidelines was made by the collaborative effort of many staff members of the World Health Organization, in particular at the WHO Regional Office for South-East Asia, in New Delhi, and at WHO headquarters in Geneva. The participants in several national or inter-country seminars and workshops (in Bangkok in 1977, Barbados in 1979, and Kathmandu in 1980, for instance) also provided invaluable comments on earlier drafts. They are too numerous to mention individually here, but we acknowledge with gratitude their contribution to the improvement of this book.

In the final preparation of the guidelines, Mr Kiran Shrestha was the typist, Mr Krishna Man Shrestha was responsible for the graphics and Mrs Barbara Hornby coordinated the preparation and edited the manuscript.

We also wish to acknowledge with gratitude the financial contribution of the United Nations Fund for Population Activities towards the preparation and publication of the guidelines.

PREFACE

The main social target of the World Health Organization and of its Member States is the attainment by all the peoples of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life. However, such is the present inequality in the health status of the world's people, and in the resources for health available to them, that in order to reach this declared target there must be both a redistribution of health resources to where they are most needed and a change in how those resources are used.

Of all the resources for health, the human resources are assuredly the most important, for all forms of health care depend upon a body of trained health personnel. To bring about the required changes in the development and utilization of this manpower, systematic and integrated planning is needed that takes into account the knowledge, skills and attitudes required by all categories of health personnel, the numbers needed in the different categories, and their effective deployment.

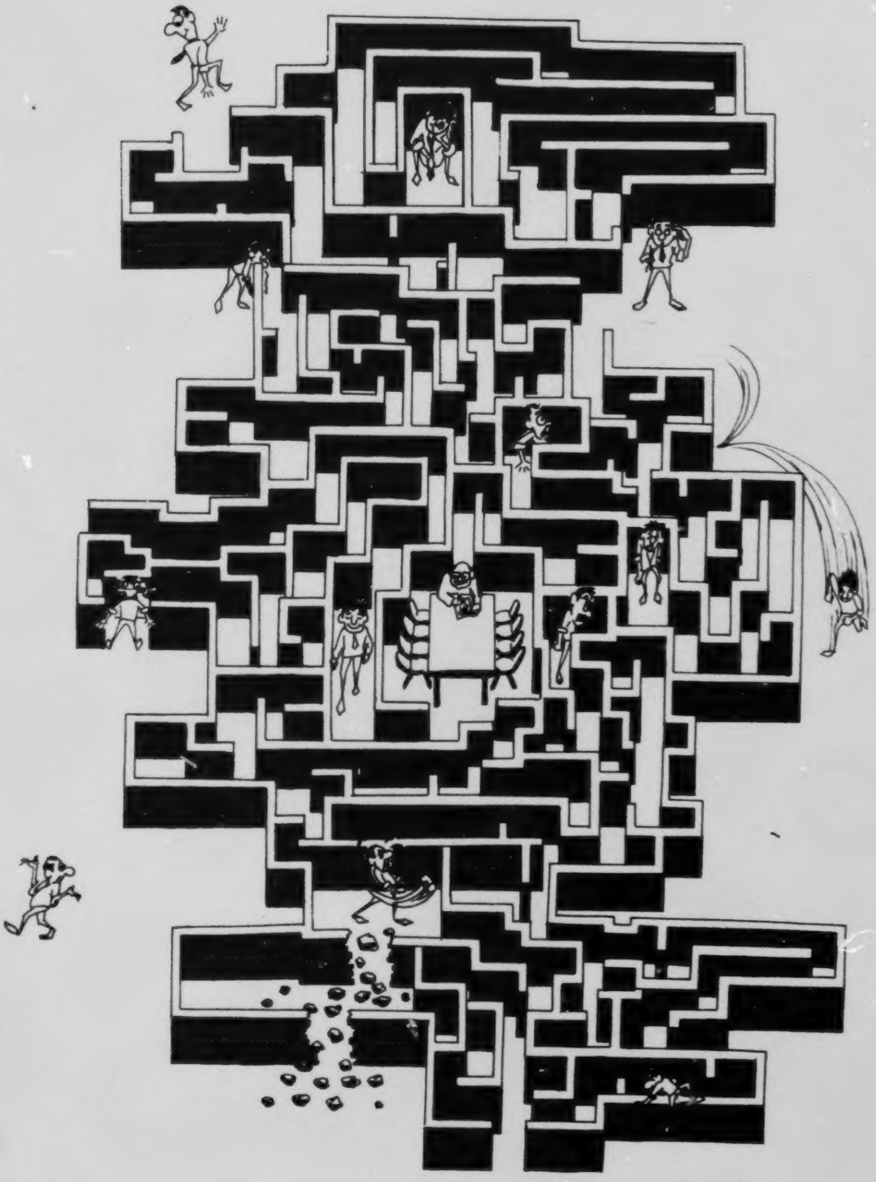
In many countries, too little attention has been paid to health manpower planning, and sometimes, when plans have been developed, they have proved inadequate. The purpose of this book is to help countries to acquire a cadre of manpower planners by presenting a basic course for the training in this field of health service administrators and educators, whether they occupy positions at the national, provincial, or local level. It is expected that some of them will become teachers of manpower planning in their turn. These guidelines are expected also to contribute to the formulation of actual health manpower plans as they provide a set of procedural steps that planners may wish to follow.

INTRODUCTION TO THE COURSE

SUMMARY

Manpower is the most precious resource of a country. Without trained manpower, other resources cannot be properly used and this is even more true in the health sector than in many other sectors. In many countries, not enough attention is paid to planning for manpower and in part this is due to a lack of health manpower planning specialists.

Health manpower planning consists of determining how best to produce, deploy and use manpower in the right numbers and with the right skills to perform health service functions. This course aims at strengthening health manpower planning in countries by disseminating its principles and planning methods by means of workshops. Workshop participants are from health, education and related sectors who make plans and decisions on matters related to health manpower development. This course consists of twelve half-day sessions and emphasizes group work. The training should as far as possible take place just before an actual health manpower planning exercise.



WHERE TO START ?

OBJECTIVE

The objective of the course is to facilitate the training of health service managers, planners and educators who can apply the principles and methods of health manpower planning. Within this objective, the Guidelines can be used for two purposes:

- To facilitate the further education of senior staff to cover the principles, methods and uses of manpower planning. After the course, these participants will be able to direct and monitor the activities of a manpower planning team so as to be able to plan strategies for the correction of discrepancies between manpower supply and manpower needs of health services, in the framework of the resources and the infrastructure available.
- To facilitate the training of other health service staff in the application of the principles and techniques of health manpower planning. After the course, these participants will be able to specify the information needed for manpower planning calculations and be able to perform these calculations.

INTRODUCTORY MATERIAL

Role of manpower in health services more crucial than in many other sectors.

Manpower is the most precious resource of a country. Whatever other resources there are, without trained manpower they can neither be exploited nor properly used. The role of trained manpower is even more important in the health sector than in many other sectors. The provision of health care depends primarily on trained health manpower, and salaries and wages usually consume more than two-thirds of health budgets.

In many countries, not enough attention is paid to manpower planning.

Notwithstanding the great importance of manpower to the health sector, relatively little attention is paid to manpower planning. This leads to waste of resources, e.g. hastily constructed health facilities lying idle owing to a lack of trained manpower, or rapidly expanded education facilities that produce more manpower than the services can absorb. Manpower, as compared with other resources, has unique characteristics that make planning for it complex. Manpower cannot be stored for future use and is not freely substitutable as are machines because of considerations of motivation and attitude. Hence, manpower planning must be done systematically, in the light of the availability of a complex array of facilities and resources and taking account of the basic and national characteristics of different types of manpower.

Lack of trained health manpower planning specialists has hindered the development of manpower planning.

One of the factors that has hindered the growth of manpower planning is the lack of trained planners. Since manpower is needed at all levels of the health services, there must be an awareness of the need of planning, and there must be planning itself at all levels - national, regional and local - although the details of planning will be different at each level. One way to rectify the shortage of planners is to train systematically in manpower planning both health service administrators and teachers, the former because they plan the use of manpower and the latter because they produce manpower.

Health manpower planning should be an integral part of health planning.

Health manpower planning should be an integral part of health planning. The main purpose of manpower planning is to ensure the production, deployment and use of manpower in the right numbers and with the right skills to carry out current and planned health service functions. Consequently, manpower planning must support and interact with health planning. Although manpower planning can be undertaken independently of health planning, at the same or at another time, it must conform in basic methodology to health planning.

WHO has been engaged in promoting manpower planning in recent years by means of a series of training and other activities in its regions, often with groups of experts from different countries. It has contributed to the production of materials on manpower planning, e.g. the book entitled Health Manpower Planning: Principles, Methods, Issues, edited by Hall and Mejia.

However, there has been a shortage of practical training materials for short courses to train planners and others concerned with health manpower. The material in this document aims at filling the gap; it has been prepared in collaboration with WHO Headquarters and the WHO Regional Office for South-East Asia. An initial draft was reviewed by experts and tested in seminars (e.g. the SEAR Inter-country Seminar on Health Manpower Studies, 14-23 November 1977, Bangkok). A revised version was used in a Health Manpower Planning Workshop in Nepal, March 1980. As a result, the needs and learning processes have been better understood and this is reflected in the present document. The course should be seen as merely one more step in the continuing process of developing materials and procedures to improve manpower planning.

Certain guiding principles are followed in the development and application of these guidelines.

In order to develop health manpower planning capabilities in countries, the following principles are observed in these guidelines:

1. Health manpower planning should be promoted at different levels of the health services and in educational institutions to prevent wastage

of human and other resources.

2. To train personnel in manpower planning, national training programmes are preferable to international programmes, which should be used primarily for exchange of experiences.

3. Manpower planning should be an integral part of health planning, although, at the outset, it can be undertaken separately. Manpower planning should be integrated gradually with health planning.

4. To strengthen planning processes in countries, the development of learning materials for manpower planning should be coordinated with other planning manuals, e.g. in educational planning, health planning, etc.

5. As far as possible, learning should be tied to practical experience. Learning by doing is the best way to assimilate new and systematic principles. As far as possible, training should precede a health manpower planning exercise.

6. Although the course follows a set of procedural steps, these are meant to be indicative only. The steps should be adapted to the conditons in a country.

The course as presented is not an end in itself. It is only the beginning of a process. It has to be tested in practice and revised as necessary, and its effects have to be evaluated.

The course is intended for health planners concerned with initiating, directing and conducting planning efforts . It is designed, therefore, for:

- Project and divisional chiefs concerned with manpower planning or with plans and policies relating to manpower;

- Planning staff from ministries of health, education, and other relevant sectors;

The course is intended for staff concerned with the policy making, planning and implementation aspects of manpower development and use, and also for those concerned with collecting and analyzing information.

- Teachers of public health, health administration/management;
- Personnel division chiefs;
- Planning commission staff.

They may be drawn from national and sub-national levels of a ministry's operations, but they should always be in posts concerned with taking decisions with implications for manpower.

The learning material may be used in developing and developed countries.

The learning materials have been prepared with participants from developing countries in mind. However, there is no reason why they could not be used also in developed countries. For developed countries, some of the material will have to be revised, especially the examples and the exercises.

It also may be used for training purposes in educational institutions.

The material can also be used in educational institutions, e.g. schools of public health, schools of medicine and nursing. Again, it would imply certain adaptations, especially of the exercises. Course participants are assumed to have had substantial experience in health administration or in education.

The course can be conducted in one week.

As the course consists of twelve sessions, each of which takes half a day, it could be run as a six-day block lasting one working week.

Each session of the course is divided into three elements.

The material is intended for use in a group learning setting such as a workshop or seminar. The course has twelve three-hour or half-day sessions. Each session may be divided into three sections: first, one-half hour reviewing the main elements of the material for that session and clarifying points not clear to the participants; second, one and a half to two hours in groups undertaking group work exercises arising out of the material of the session; and third, one half to one hour reporting and discussing the group work in the plenary session.

The maximum number of participants, it is suggested, should be twenty. The exercises have been structured for group work, i.e. by groups of about five participants. This is considered to be more productive than individual work.

The number of participants should be limited to about twenty.

The documentation for all sessions is identical in format. It contains the following:

The material for each session follows the same format.

- a summary of the content;
- a statement of the specific educational objectives of the session;
- the session structure;
- learning material, including practical examples, covering the topic area directly linked to the educational objectives;
- reference list of additional background reading on the session topic;
- work exercises.

It is intended that group work should be typed and distributed next day for use later in the course, as well as after the course as reference material.

To make the course country-specific, a new set of work exercises should be designed, relevant to the problems of the country in which the course is held. This should increase the motivation of the participants. This implies some preparatory work for the course, whether by its national director or an external consultant.

Some preparatory work for each course is desirable to adapt exercises to local issues.

If the course is followed by an exercise in manpower development planning, the exercise should follow the corresponding steps in the course. The exercises for the course should obviously then be geared to the planning exercise. For example, a country report produced for the course could be used for the actual planning exercise.

Health manpower planning will follow a process similar to that used in the course.

Measuring Performance

Evaluation of the course is undertaken for future improvements.

	Short-term	Long-term
Course	Comprehension	Retention
Application	Use of what was learned	Effects

For course evaluation, which tests the comprehension of the participants, the following instruments are used:

(1) A pre-course questionnaire.

(2) A daily evaluation of the session(s) covered during the day.

(3) A questionnaire administered after the course to obtain the participants' opinions about the value and clarity of each of the sessions.

To assess longer-term effects of the course, questionnaires are probably inadequate and interviews conducted at periodic intervals after the course may be more appropriate. All information obtained through structured interviews should be oriented toward some corrective actions. A part of the interview may consist of questions such as whether the participants have started manpower planning activities and whether these activities have had any impact. In addition, questions may be developed from the educational objectives of the course to test the use that has been made of the learning materials.

PRE-COURSE QUESTIONNAIRE

Course held from ______________________ to ______________________________

in ___________________________________

Name ________________________________

The purpose of this questionnaire is to obtain from you what you know of health manpower planning before you start the course. It is not intended to compare your knowledge with others. We would ask you, therefore, to complete this questionnaire before you begin the course and before you read any of the material in this manual, and to hand the completed questionnaire to the course coordinator.

1. Age:

Less than 30	☐	51 - 60 years	☐
30 - 40 years	☐	More than 60	☐
41 - 50 years	☐		

2. Educational background:

Qualification	Arts	Sci.	Med.	Nurs.	Admin.	Econ.	Edu.	Other
Certificate	☐	☐	☐	☐	☐	☐	☐	☐
Diploma	☐	☐	☐	☐	☐	☐	☐	☐
Bachelor's Degree	☐	☐	☐	☐	☐	☐	☐	☐
Master's Degree	☐	☐	☐	☐	☐	☐	☐	☐
Doctorate (Ph.D.)	☐	☐	☐	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐	☐	☐	☐

3. Present job: Title: ____

Principal function:

Management	☐	Finance	☐
Administration	☐	Service Delivery	☐
Personnel	☐	Education	☐
Planning	☐	Other	☐

4. Years in present position:

Less than 1 year	Between 1 yr & 3 yrs	Between 3 yrs & 5 yrs	More than 5 years
☐	☐	☐	☐

5. Previous training in health planning:

Type of Training:	Duration					
	None	1-2 wks	2-4 wks	1-3 mo.	3-12 mo.	12 mo.
In-service workshop		☐	☐	☐	☐	☐
Seminar		☐	☐	☐	☐	☐
University course		☐	☐	☐	☐	☐
International workshop/seminar		☐	☐	☐	☐	☐
None	☐					

6. Previous experience in health planning:

Planning Level:	Planning Period			
	None	Annual	1-5 yrs	Long-term
National		☐	☐	☐
Regional		☐	☐	☐
District		☐	☐	☐
None	☐			

7. Please read the following statements about the purpose of manpower planning. Check the appropriate column for which of these statements you feel are TRUE, which FALSE and which you DO NOT KNOW.

The purpose of health manpower planning is to:	TRUE	FALSE	DO NOT KNOW
a. Control the cost of training health manpower	☐	☐	☐
b. State exactly how many people at each skill level will be required in the future	☐	☐	☐
c. Train a group of people to guide the legislature to make wise decisions about health service extensions	☐	☐	☐
d. Help ministers and directors of health to justify the cost of health service personnel	☐	☐	☐
e. Reduce the number of people working in the health service	☐	☐	☐
f. Create a separate and independent training system for health staff	☐	☐	☐

8. Amongst the following statements are some which describe the effect of a LACK of health manpower planning. Identify them by putting a check in the appropriate box.

A lack of health manpower planning leads to:	YES	NO	DO NOT KNOW
a. Health institutions with insufficient staff to provide planned services	☐	☐	☐
b. Not enough equipment in the services to meet requirements	☐	☐	☐
c. Majority of the health needs of the population being unmet	☐	☐	☐
d. Staff working in posts for which they are not trained or qualified	☐	☐	☐
e. Inadequate budgets in health training institutions	☐	☐	☐
f. Dissatisfaction among health personnel because of blocked or uncertain careers	☐	☐	☐

9. There are a number of different methods to determine how many staff will be needed in the future. Ultimately all these methods can be grouped into one or other of the principal methods. How many principal methods of determining future staff requirements are there? Please put a check in the appropriate box.

1	2	3	4	5	6	7	8
☐	☐	☐	☐	☐	☐	☐	☐

10. To solve mismatch problems between the supply and requirements for staff, the nature of the problem presented needs to be identified under one of five basic problem area headings such as:

1. The total number of staff employed
2. The skills/knowledge of staff

Please list the three other problem area headings:

3.	
4.	
5.	

11. To monitor progress in terms of a health manpower plan, information is needed from three separate organizational entities, both within and outside the ministry. Can you name what these are in general terms?

1.	
2.	
3.	

12. Have you ever previously been involved in a health manpower planning activity?

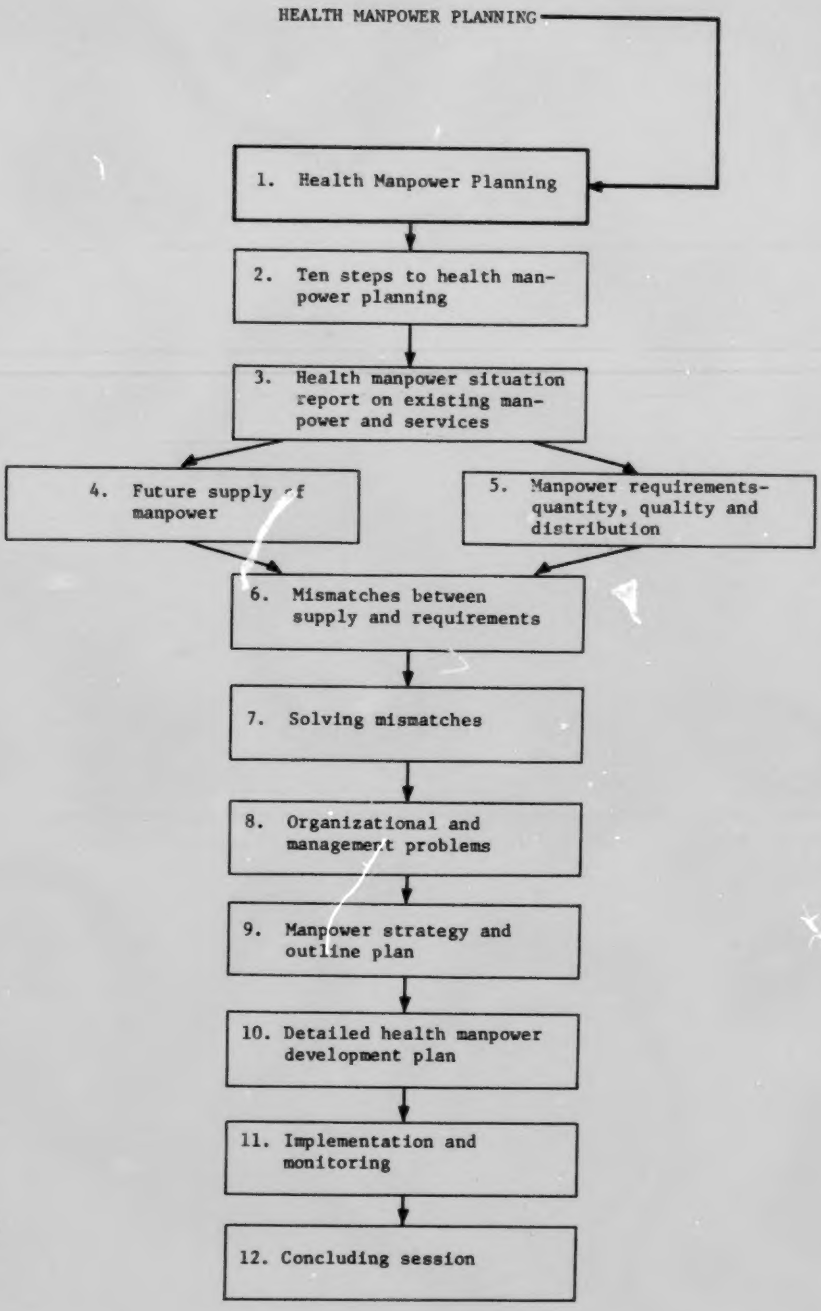
Yes ☐ No ☐

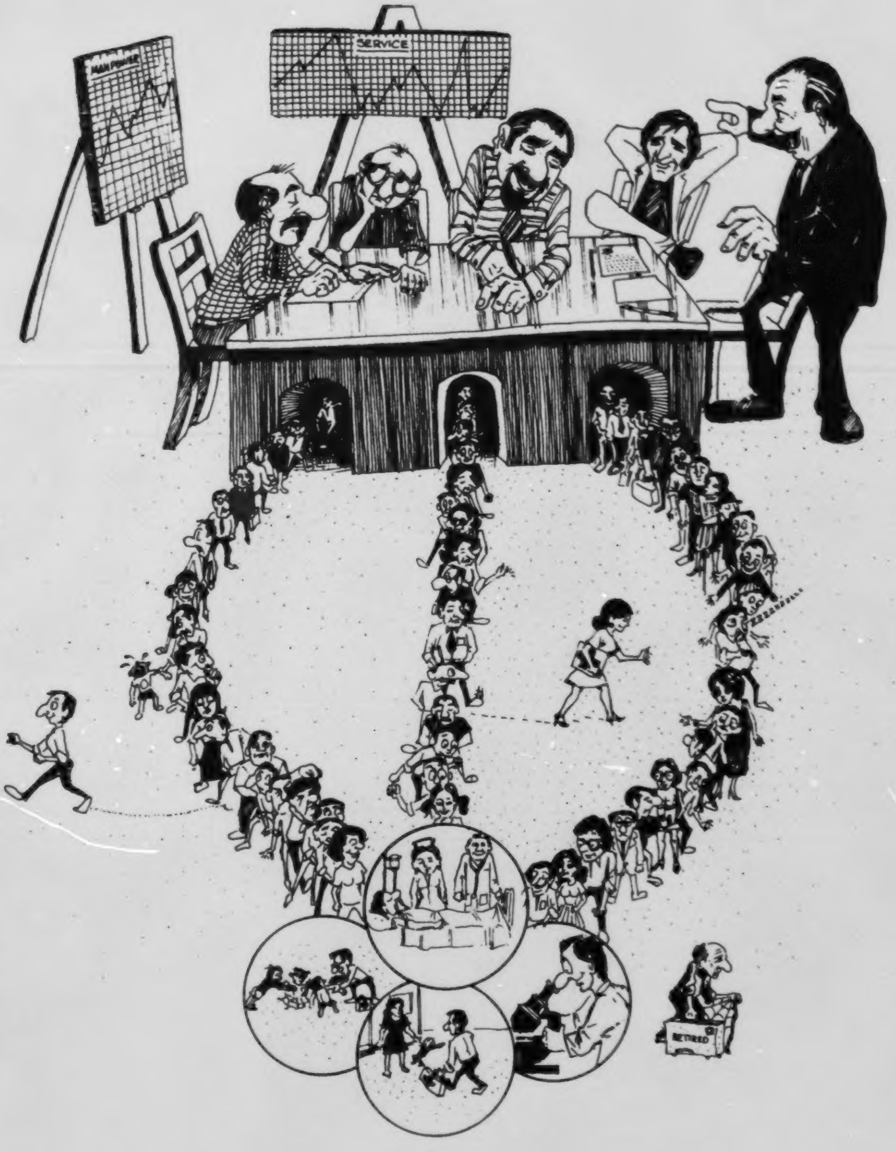
13. Do you expect to be involved in health manpower planning activities in the near future? If yes, what do you expect your role to be? Please put a check against the most appropriate category.

1. Determining manpower issues and suggesting solutions and policies.	
2. Doing manpower calculations	
3. Providing information	
4. Representing interested parties or professional groups	
5. Other	

SESSION I

HEALTH MANPOWER PLANNING


HEALTH MANPOWER PLANNING
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session


MANPOWER
SERVICE
RETIRED

PLANNING FOR FUTURE NEEDS

SUMMARY

Health manpower planning seeks to ensure that the right numbers of manpower are available at the right place, at the right time, and with the requisite skills and motivation to deliver health care to the population. To do this effectively, health manpower planning must support and be fully integrated with health planning. It must also recognize the diverse interests involved and seek to find solutions to manpower problems which satisfy these interests.

In the past, health manpower planning has generally been relegated to the relatively narrow role of making quantitative estimates of manpower supply and needs, and then manipulating one or both of these to bring them into balance. This course seeks to widen the scope of health manpower planning so as to include qualitative as well as a wider range of quantitative issues and to ensure a greater participation of planners in the implementation and evaluation of planned programmes.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Define basic terms and concepts relating to health planning and health manpower planning.
2. Specify the principles and the components of health manpower planning.
3. Describe the principal difficulties that can lead to a reduced effectiveness of health manpower planning.
4. Describe how health manpower policies are made.

SESSION STRUCTURE

Define health manpower planning and examine its relationship to national health planning

Review the major factors influencing the quality and effectiveness of manpower planning

Describe a framework for a health manpower planning process

Review the health manpower policy-making process and its significance in the planning process

LEARNING MATERIAL

WHAT ARE HEALTH PLANNING AND HEALTH MANPOWER PLANNING?

Health planning (HP) is the process of defining community health problems, identifying resources, establishing feasible health and health care goals, and specifying technical and administrative actions to reach these goals. It is an integral part of a larger planning effort for socio-economic development. The successful achievement of health targets specified in health plans depends on many factors. They include the availability of resources, appropriate technology, the effective management of resources and the population's participation and acceptance.

Health planning defines problems, goals and actions.

Health planning is a process that transforms a country's resources into services that can cope with its priority health problems. It takes place in the context of a country's health system.

Health planning takes place in the context of a health system.

The health manpower system, which for practical purposes may be considered a sub-system of the health system, encompasses all those institutions and activities concerned with the planning, production and management of health manpower resources. It transforms policies and resources into manpower, which in turn gives health care to the people.

The health manpower system is concerned with the planning,, production and management of health manpower.

Within the health manpower system, there is a constant flow of information, resources and decision-making between various political entities, service and educational institutions, professional bodies and consumers; this flow defines the health manpower process. Within this process a range of manpower planning, production and management activities take place. The scope of these activities is shown in Table 1.1.*

In the health manpower process, there is a constant flow of information, resources and decisions among the various groups concerned with health manpower.

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*Hall, T.L. and Mejia, A., ed. Health manpower planning: principles, methods, issues. Geneva, WHO, 1978 (Chapter 2, p. 36).

Table 1.1. THE SCOPE OF THE HEALTH MANPOWER PROCESS

Overall aim — To ensure the manpower needed by the health care delivery system

	Health manpower planning	*Health manpower production*	*Health manpower management*
Goal	To provide the framework within which the health manpower process takes place	To provide the manpower required	To optimize the use of health manpower
Objective	To specify the number of teams and the composition needed to improve the level of health up to a proposed level	To produce x people of *y* types	To determine manpower distribution and productivity standards, patterns of utilization, and non-labour inputs
Strategy	Regional (sub-national) planning and local programming Health manpower project formulation Aggregation, reconciliation and consolidation	Educational planning and programming educational objectives and teaching methods	Reorganization - regionalization - integration of prevention and cure - country health programming; - primary health care - health manpower project management
Activities	Planning and programming Coordination Monitoring and evaluating implementation Research and development	Recruitment campaign Definition of admission procedures and syllabus Definition of teaching methods Evaluation of process and products	Establishment and implementation of - supervision system - referral system - continuing education - recruitment and selection procedures - career development schemes - deployment of manpower - staffing patterns
Targets	x health teams of *y* composition in operation by time *t*	x trained personnel of *y* type by time *t*	x units of service of specified quality delivered to defined population -coverage

Health manpower planning -- the subject of this course -- takes place within the larger frameworks established by the current health system, on the one hand, and by efforts to improve the rationality and effectiveness of that system on the other. Health manpower planning matches national health plans and commitments with trained people. The term "health manpower" refers to those people (1) who are trained for specific functions which have the ultimate objective and effectiveness of promoting, maintaining or restoring health, and (2) who work within the general boundaries of the health sector. The main objective of health manpower planning is to ensure that enough manpower with the needed skills is produced, and then used both efficiently and effectively. To achieve th this, manpower planning must seek to provide a bridge between the educational institutions and the training programmes that produce manpower and the health service organizations and institutions that "consume" manpower.

Health manpower planning: matching aspirations, commitments and human resources.

WHY HAS MANPOWER PLANNING NOT BEEN EFFECTIVE ?

Manpower planning is by no means new. Almost all organizations have been and are concerned with planning for the future. However, in general, manpower planning has not yet proved its worth, for various reasons. Some of the most important of these reasons are as follows.

While manpower planning is not new, its record of accomplishments is still very limited.

First, manpower is an extremely complex resource to manage because:

Manpower is an extremely complex resource to manage.

- individuals vary greatly in their levels of skill, attitudes toward work, motivation and behaviour;
- trained manpower cannot be produced at short notice;
- work patterns, once established, may be very hard to change, even though circumstances change;
- patterns of employee behaviour, particularly in terms of their propensity to leave, are difficult to predict; and

- persons of differing skills and work experience can only be substituted for each other to a limited degree.

Manpower planning and development activities are often not synchronized with health plans.

Second, manpower planning and manpower development are often not synchronized with health plans. As a result, resources are not developed in parallel and trained personnel are not well used. Examples of problems arising from inadequate coordination are numerous:

- A newly expanded hospital, completed at great cost with the assistance of foreign loans, stands unused because of a lack of nursing staff.
- The gift from a developed country of a modern university hospital soon becomes a double liability: a major drain on the health budget, and an unsuitable sophisticated teaching facility, irrelevant to local needs.
- To pay the wages of the health staff, the budgets for drugs, equipment and facility maintenance are cut so severely that the effectiveness of the health service is seriously reduced.
- Three nursing schools are opened in a region where there are already enough nurses; one hospital in the region averages two nurses for three beds.
- Administrative barriers to the promotion of health workers causes morale to fall to such a low point that employee turnover rises and little work is done.

Coordination between manpower development and programme management is often lacking.

Third, there can be a lack of coordination between manpower development and programme management. Numerous factors contribute to this, including:

- limited awareness of what planning is and how it is done, which has resulted in planning being assigned low priority;

- fragmentation of health services among multiple administrations and agencies, and of training programmes among multiple and often entirely independent universities, faculties and schools;
- organizational and administrative rigidities;
- opposition of many interest groups to better coordination for fear of unwanted change;
- failure to take into account the political context during the preparation and implementation of plans; and
- the lack of participation of all interested parties, including planners, in carrying out the planned programmes.

Fourth, manpower planning has traditionally been carried out within a rather narrow mandate. It has tended to be concerned with the "numbers game," that is with projecting and matching between the total number of health workers needed and their supply. In making these projections, manpower planners have often neglected qualitative issues such as the relevance of educational programmes to service needs, manpower productivity, the downward delegation of tasks and manpower distribution.

Planning has tended to be a "numbers game," matching supply with demand but not addressing important qualitative issues.

Fifth, manpower planning, as well as health planning in general, has tended to be concerned more with the formulation of plans than with implementing and evaluating programmes, or with managing the planning process itself.

Planners have often neglected implementation, with adverse effects on achievements.

As countries have become more aware of the high cost of inadequate planning they have sought to correct many of these deficiencies. In particular, they are trying to create strong national health planning capabilities and, in that context, to coordinate their efforts to plan for health manpower development and to ensure that

Recognition of these problems has led many countries to strengthen planning and integrate manpower development into their plans.

health manpower planning becomes a cyclical and continuing process. The importance of integrating health manpower planning into health planning needs particular emphasis. In many countries, health planning is already well-established. In other countries, however, health planning is still in a developmental stage. Health manpower planning in these countries needs a parallel development so that it may eventually be integrated into the health planning framework.

WHAT IS INVOLVED IN HEALTH MANPOWER PLANNING ?

Health manpower planning parallels health planning in having 5 major steps.

Health manpower planning in many respects parallels the five major steps of health planning. These are:

(1) data collection and analysis

(2) situation analysis and broad programming

(3) detailed programme formulation

(4) programme implementation

(5) programme evaluation

For simplicity of presentation, these steps are listed in sequence. In practice, however, they are carried out on an interactive and cyclical basis, so that planners may be working on several steps at one time.

Within the health planning process, manpower planners seek to identify those actions dealing with manpower that will help to ensure the orderly development of the health programme. Throughout this manual, the many points of contact between activities of manpower planners and those of their counterparts concerned with health planning in general are highlighted.

The course followed by the manpower planner in deriving manpower needs is a logical progression.

It starts with a review of the type, size and other characteristics of current health programmes and of prevalent health problems. It then proceeds through an analysis of current trends, of resource availability, and of constraints and obstacles to the attainment of objectives. The planning phase ends with the conversion of future goals into services, and of services into the manpower needed to provide them.

The planning phase normally takes the planner through a logical sequence that includes assessment of the current situation, data collection and analysis, definition of objectives and a conversion of health goals into services and of services into manpower.

Figure 1.1 presents a framework for the formulation of a manpower plan. The cyclical nature of the plan process is emphasized in this figure by the path of dotted lines which lead the planner back to the different alternatives open to him for bringing supply and demand into balance. However, matching the likely manpower supply with the likely demand is only the first step in formulating a plan. Additional tests must be made to ensure plan feasibility and the availability of funds and other resources, and also to ensure that the requisite mechanisms for implementing and coordinating the planned programmes exist.

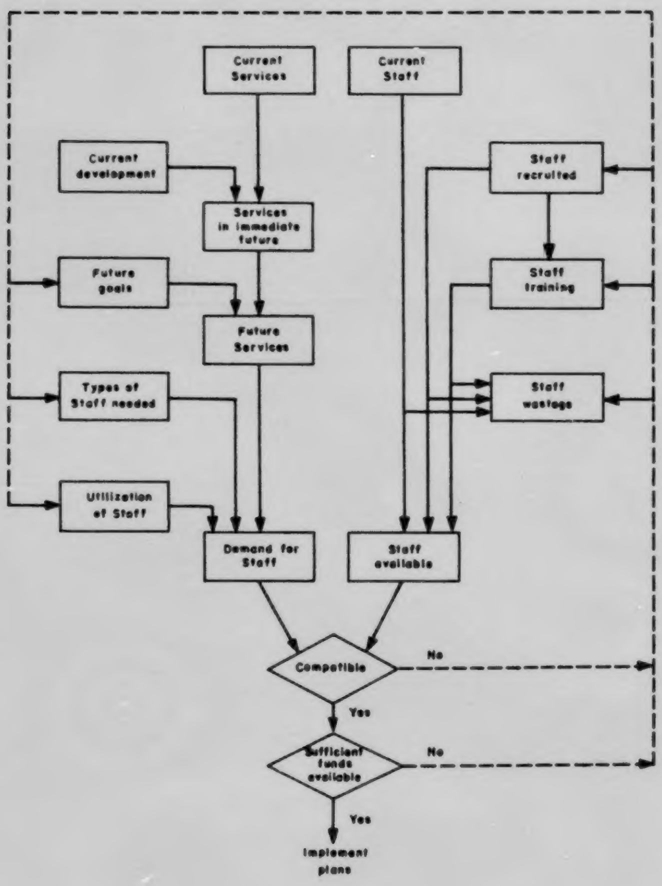
While some mention has been made in the early part of the Session of the involvement of different interest groups in the manpower process, for the most part the discussion up to this point has concentrated on the more obvious formal aspects of manpower planning. Later sessions in the course will explore these aspects in more detail. Of equal importance, but more difficult to articulate, is the process through which manpower policies arise before and during the planning process itself. It is with this crucial part of the planning process that the rest of this Session is concerned.

HOW ARE MANPOWER POLICIES DETERMINED ?

Policies are both an essential input to planning as well as, ultimately, a major output. In the case of health manpower, health service policies provide broad directives for the course and elements of manpower development. Policies do not

Manpower policies: both an essential input to as well as output from the manpower planning process.

Figure 1.1. MANPOWER PLAN FORMULATION: A FRAMEWORK*


Current Services
Current Staff
Current development
Services in immediate future
Staff recruited
Future goals
Staff training
Future Services
Types of Staff needed
Staff wastage
Utilization of Staff
Demand for Staff
Staff available
Compatible
No
Yes
Sufficient funds available
No
Yes
Implement plans

*Based on a figure in Hornby, P. et al. Trends in planning for health manpower. WHO Chronicle, 30(11):447-454 (1976).

define the precise sequence of actions to be taken, but they provide a framework within which they can occur.

Policies are formulated by a complex process that involves the interaction of many diverse factors and interest groups, an interaction which greatly complicates the work of the planner and leads to considerable uncertainty in planning. There are three basic components which contribute to the formulation of policy: the environment, participants, and the process itself.

Policy-making has three essential components: an environment, participants, and the policy process itself.

The policy environment consists of political, social, economic, technical and legal factors. One of the most important aspects of the policy environment is the value system held by the society. For example, belief in the free enterprise system will itself largely determine the general framework within which the health care system can develop. Within this framework, certain types of plans and actions will prosper, while others have little prospect of even being considered.

The policy environment is made up of many variables.

Who participates in policy-making depends on the issue under consideration. The diversity of vested interests and the rarity of concensus on many policy issues make competition for influence and power unavoidable. The balance of power among the diverse interest groups concerned with a given issue will often determine the policies that eventually emerge.

Participants in policy-making will depend on the issues at stake.

Two distinct policy-related groups can be identified; the policy-makers and the policy-seekers. The former group has the authority to make policy, although how this authority is exercised depends on whom the group consists of. Examples of policy-makers are executives, administrators, legislators and judges.

Two types of participants will be involved: policy-makers and policy-seekers.

Policy-seekers in some ways represent a more complex category in that they both seek policy

Policy-seekers have a complex role: both seeking policy decisions and helping to make them.

decisions and are instrumental in making them. This group expresses demands, brings certain issues to light, and mobilizes support for them. Policy-seekers include such interest groups as health professional organizations, health insurance agencies, drug manufacturers and various consumer groups. There is a strong interaction between policy-makers and policy-seekers, with the latter engaging in a wide variety of activities to bring pressure to bear on the former.

The policy-making process: a period of conflict, negotiation and compromise.

All participants, whether official or unofficial, will engage, at one time or other, in initiating, vetoing, coordinating, lobbying, making propaganda for its views, and agitating. Some groups will fare better than others in this, and those who win are more likely than the losers to be large, affluent, cohesive and prestigious, to have strong leadership, and, very important, to have some vital issue at stake. To resolve the inevitable conflicts there may be bargaining among organized groups, and coalitions may form around shared interests.

There are three stages of the policy-making process.

Even though policy-making is a continuous process with no clearly defined beginning or end, it has three principal sequential stages, possibly with movements back and forth between stages. They are:

(1) Agenda setting: how a problem is included in a policy agenda and who participates in the discussions.

(2) Policy formulation: how problems are defined and alternative policies compared.

(3) Policy implementation and evaluation: who is responsible for these and how policies are implemented and evaluated.

Issues appear on policy agendas for many reasons, not least of which is their timeliness.

It is important to understand why some problems appear and others do not appear on the policy agenda. Some are not included because the interest groups are passive and accept existing policies, or are inarticulate, unorganized, or lack access to the policy-makers. One factor that can affect the chance of getting certain issues on the policy agenda is timeliness. It may be politically feasible to consider a certain issue at a particular time (e.g., the use of community health workers in villages), or conversely, the issue may be far too controversial or misunderstood to be included.

For a problem to be identified as a policy problem, people must be aware of it, its seriousness must be known, someone must believe it to be soluble, and there must be commitment to seeking a solution. The chances of success can be enhanced when concerned interest groups have strong leadership, the problem has adverse consequences for many people, and the issue is well publicized.

Conversion of issues into formulated policy should ideally follow a systematic five-step process.

Even when a problem has been placed on the agenda, subsequent action is by no means guaranteed. A series of steps follow as part of a decision-making process which ends in either action or non-action. The decison-making process, which may be termed policy formulation, should ideally follow the basic steps of systematic problem-solving, namely:

(1) problem/issue identification together with clarification of objectives;

(2) development of strategies to achieve objectives;

(3) determination of foreseeable consequences;

(4) comparison of consequences; and

(5) selection of policies.

The above five steps are seen as a rational process, though the degree to which they are followed in practice and their eventual outcomes are very much governed by various interest groups and their relative power at the time of decision.

Different interest groups will have a differential access to policy-makers.

The policy-seeking groups try to gain access to policy-makers in many different ways. Some have greater ease of access than others. The policy-maker may be a member of the interest group or may be indebted to it; some groups are endowed with more resources or organizational skill than others; some groups are well placed in the social or economic hierarchy; and some groups, such as physicians, find decision-makers more accessible to them than to others.

Different communication mechanisms are used by policy-makers to involve policy-seekers.

As examination of policy issues proceeds through a variety of channels, policy-makers often use certain procedures for informing the public before final decisions are made. The mechanisms for this purpose consist of advisory committees or commissions, task forces or working parties, special duty groups, and public hearings. Sometimes these are used to give an appearance of concern about an issue, when in reality policy-makers are not ready to act. Thus, they can be delaying tactics or methods of pacifying specific interest groups.

At some point in policy formulation the number of alternatives is narrowed down by the rejection of some proposals and the modification or consolidation of others. Considerable effort goes toward identifying the one alternative or several alternatives which have the greatest chance of winning approval by all or most members of the concerned parties. The successive narrowing down of the number of alternatives is done by building coalitions, establishing concensus and achieving majority support. The existence of a number of pressure groups, often with inconsistent goals, creates the need for bargaining, persuasion, negotiation and compromise.

In many cases, the substance of new policies is not determined until the implementation stage.

To facilitate agreement, the translation of policy into law or administrative regulations may be couched in vague and ambiguous terms; as a result much of the eventual policy content is determined during the implementation stage. Policy-makers occasionally produce unimplementable laws, either intentionally or unintentionally. The unintentional reasons can be due to time pressure, failure of technical staff, or lack of contact with the relevant support staff. On the other hand, unimplementable laws can be the result of a deliberate act which acknowledges a demand without explicitly considering its merit.

Policy evaluation during implementation creates pressures for modification or for different policies.

During implementation, the different interest groups continue to evaluate the outcome as they affect their own interests. The policy evaluation thus generated creates pressures, in its own way, for future modification of the policies. The criteria for policy evaluation will include the following:

- impact on the defined target problem or population;
- impact on affected groups other than the target population;
- short-term and long-term impacts; and
- the resources devoted to the programme.

Role of policy-seekers: to articulate the interests and preferences of their membership into specific policy demands.

Those who take part in policy formulation and implementation play different roles. Policy-seekers tend to express their interests and preferences into a set of policy demands. They are more likely to succeed when they concentrate on narrow issues. An important role relates to research and advisory functions performed by interest-group leaders. Policy-makers frequently depend on and consult interest groups when preparing to make decisions. To strengthen their demands, interest-group leaders also form alliances with other groups to diversify their appeal.

The planner has an important bridging role in the policy making process.

The potential contribution of a planner in policy making is in policy analysis to broaden the perspectives of policy-makers and to equalize access of policy-seekers to policy-making. The provision of information and analysis by interest groups invariably has a one-sided perspective.

In such situations planners can present a balanced perspective to the policy-makers, and, if guided by consumer interests, their input can help to reduce the traditional imbalance between provider and consumer positions.

Policy issues must be resolved before detailed planning begins.

It is essential in health manpower planning that the outstanding and unresolved policy issues be solved first before proceeding with detailed planning. For example, if a major change in medical curriculum is anticipated, the overall direction of such changes should be clarified before planners discuss how many new medical schools would be needed. These issues can only be resolved by exchange of opinion between different interested parties or policy-seekers. This needs a proper organization of the manpower planning process itself so that involved parties are consulted and represented in an appropriate forum.

HMP not just concerned with numbers; it involves conciliation of complex issues and disparate interests.

Health manpower planning is concerned with much more than just numbers. It involves the conciliation of complex issues and disparate interests, not the least of which are the very staff for whom the planning is undertaken. In this light, manpower planners or HMP working groups must be prepared to be not simply technicians but must be willing also to function as a bridge across which a consensus of agreement and coordination of health manpower development can take place.

BACKGROUND READING

Hall, T.L. and Mejia, A., ed. Health manpower planning: principles, methods, issues. Geneva, World Health Organization, 1978 (Chapters 1 and 2).

OTHER REFERENCES

1. Aspen Systems Corp., ed. Health manpower planning process. Washington, D.C., U.S.A., Department of Health, Education and Welfare, 1976 (DHEW Publication No. (HRA) 76-14013).

2. Badgley, R.F. *et al*. International studies of health manpower: a sociologic perspective. Medical Care, 9(3):235-252 (1971).

EXERCISES

EXERCISE 1. Manpower Problems

Please list in order of importance up to ten the major health manpower problems existing in your country.

EXERCISE 2. Organizational Involvement in Planning

List the main organizations or units in the country that are engaged in health planning and health manpower planning.

Which organizations do you think should be involved in health manpower planning?

EXERCISE 3. Problems of Health Manpower Planning

In your opinion, what are the main shortcomings of health manpower planning as practiced in your country? (Even if health manpower planning is not formally practiced in your country, decisions are taken in some way on health manpower development.)

EVALUATION QUESTIONNAIRE FOR SESSION 1

Date_________________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

   1. Define basic terms and concepts relating to HP and HMP.
   2. Specify principles and components of HMP.
   3. Describe main difficulties that can lead to reduced effectiveness of HMP.
   4. Describe how health manpower policies are made.

Not at all	Poorly	Fair	Well	Very well
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

2. Did you read any of the learning material before the session?

Not at all	A little	A fair amount	Most of it	All of it
☐	☐	☐	☐	☐

3. Was the learning material:

   a. useful for doing the group work exercises?

   b. easy to understand?

   c. interesting?

Not at all	Some-what	Fair	Moder-ately	Very
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

4. Did you find the illustrations:	Not at all	Somewhat	Fair	Moderately	Very
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐
5. Did you find the exercises:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated:	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

8. Do you have any other comments?

Name ______________________________

There is no need to sign your name unless you wish to do so. Thank you.

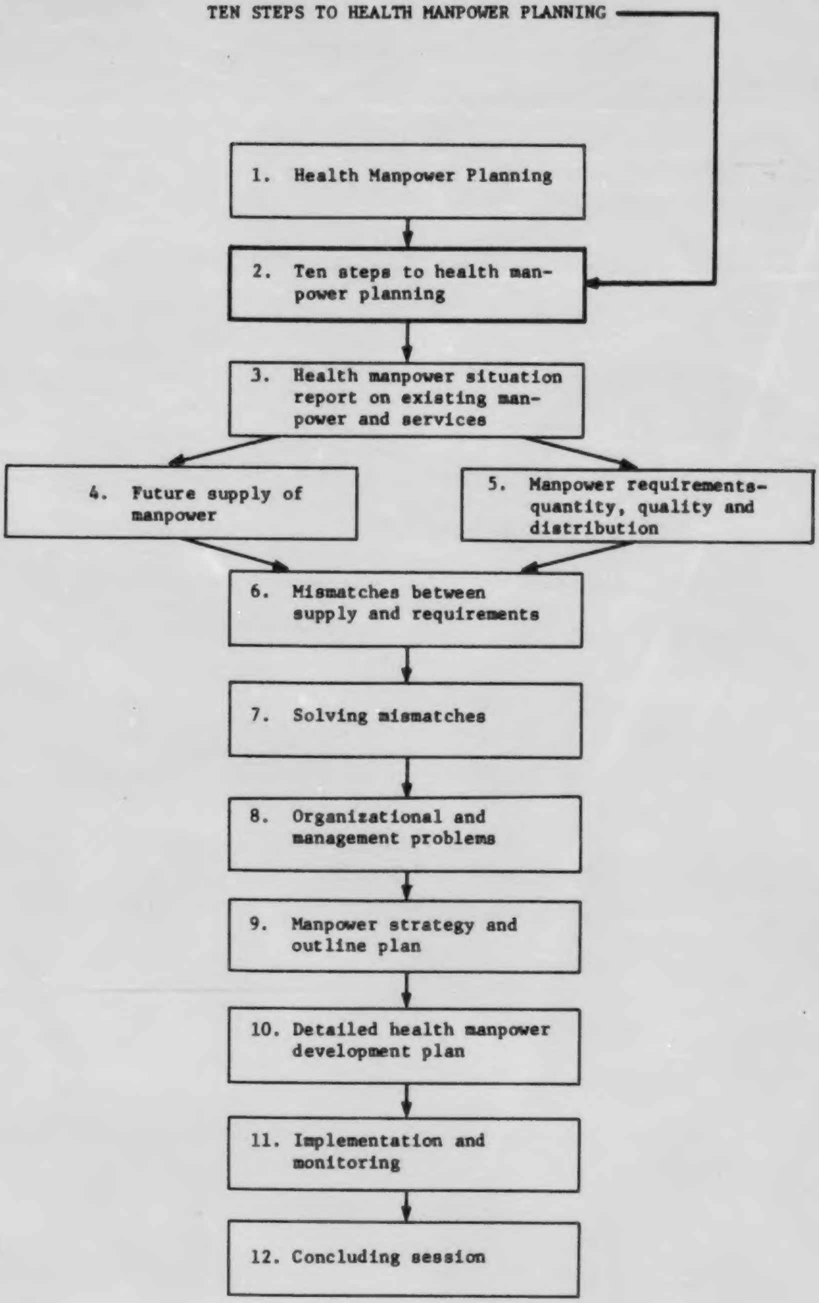
SESSION 2

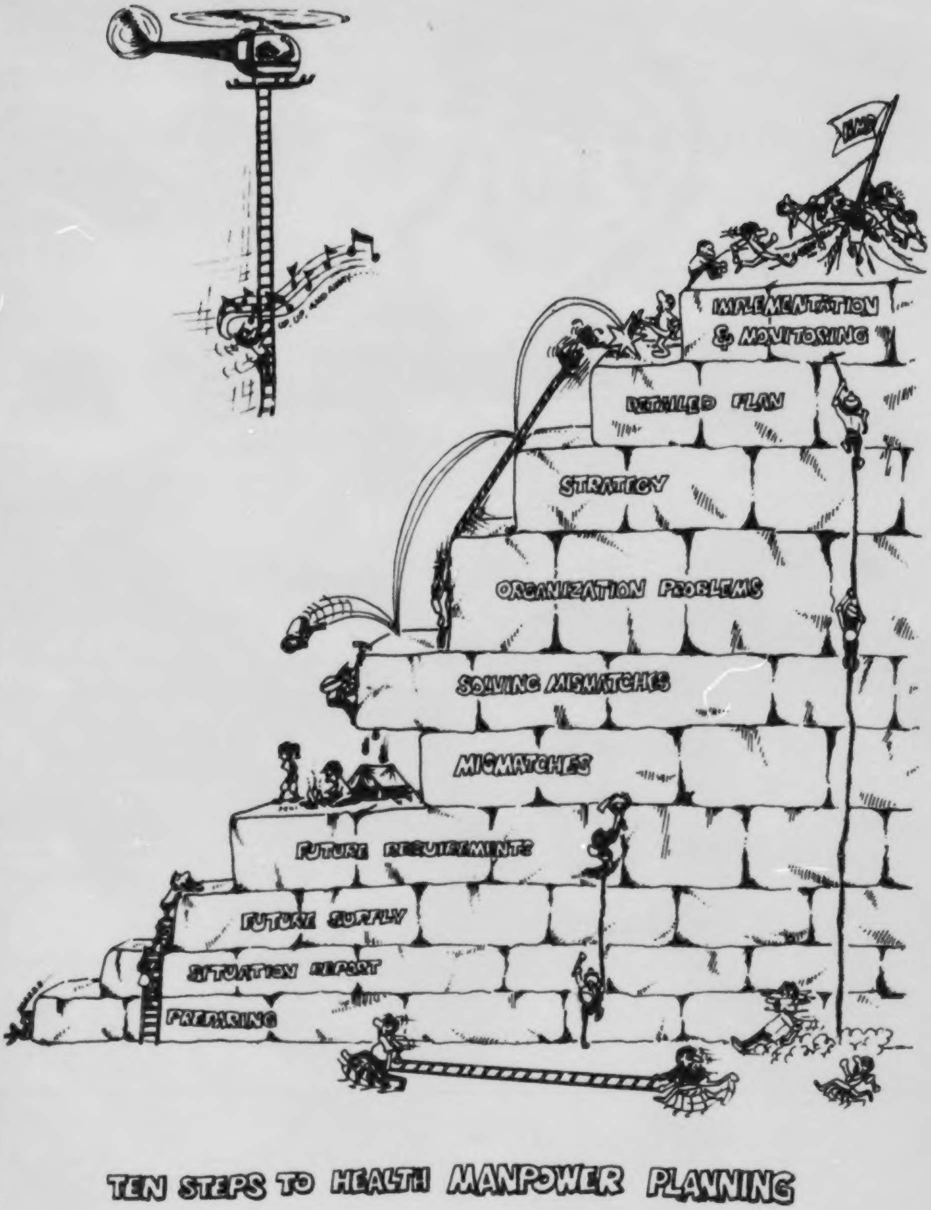
TEN STEPS

TO

HEALTH MANPOWER

PLANNING


TEN STEPS TO HEALTH MANPOWER PLANNING
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session


UP, UP, AND AWAY....
HMP
IMPLEMENTATION & MONITORING
DETAILED PLAN
STRATEGY
ORGANIZATION PROBLEMS
SOLVING MISMATCHES
MISMATCHES
FUTURE REQUIREMENTS
FUTURE SUPPLY
SITUATION REPORT
PREPARING

TEN STEPS TO HEALTH MANPOWER PLANNING

SUMMARY

The health manpower planning process is not simply a matter of quantitative calculation, but will involve complex issues, policies and the diverse interests of different groups within and outside the Ministry of Health. These interests need to be clearly understood and represented during the course of the planning process.

This Session presents a brief overview of the entire health manpower planning process, outlined here as a set of logical steps which, for convenience of discussion, are introduced in a linear sequence. While for most planning situations this sequence will be the most appropriate one to follow, it should be recalled that the planning process itself is cyclical in nature and by definition must be adapted to local circumstances. Accordingly, the planner may in practice need to deviate from the precise steps and sequence presented here in order to maximize his effectiveness.

Health manpower planning does not end with the production of a plan. Uncertainties about the future are such that planners and implementers need to maintain a continuous dialogue after implementation begins in order to be able to modify the plan as circumstances change.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Specify the procedural steps that should be followed in carrying out health manpower planning, their normal sequence, and how they would fit into national health planning.
2. Identify the organizations and institutions with which a health manpower planner should work in the preparation of a health manpower plan.
3. Describe what actions need to be taken after the plan is complete and why these actions are necessary.

SESSION STRUCTURE

Review the framework within which a health manpower planning working group must work

↓

Determine the procedural steps necessary for a health manpower plan to be properly undertaken

↓

Describe briefly the function of each of the steps and its relationship to other steps

LEARNING MATERIAL

WHAT IS INVOLVED IN HEALTH MANPOWER PLANNING ?

Health manpower planning, like health planning, is a process which attempts to identify pathways for the achievement of certain targets within the limits of available resources and to resolve or prevent mismatches between the needs and availability of manpower. The mismatches can be quantitative, qualitative, organizational or distributional. As was mentioned in Session 1, a planner will rarely reach a solution and ultimately a plan for ensuring the absence of mismatches at the first attempt. Reaching a solution will necessarily be a repetitive process, calling for successive approximations.

Planning is a cyclical process which seeks to apply resources efficiently and in a timely manner to the attainment of defined goals.

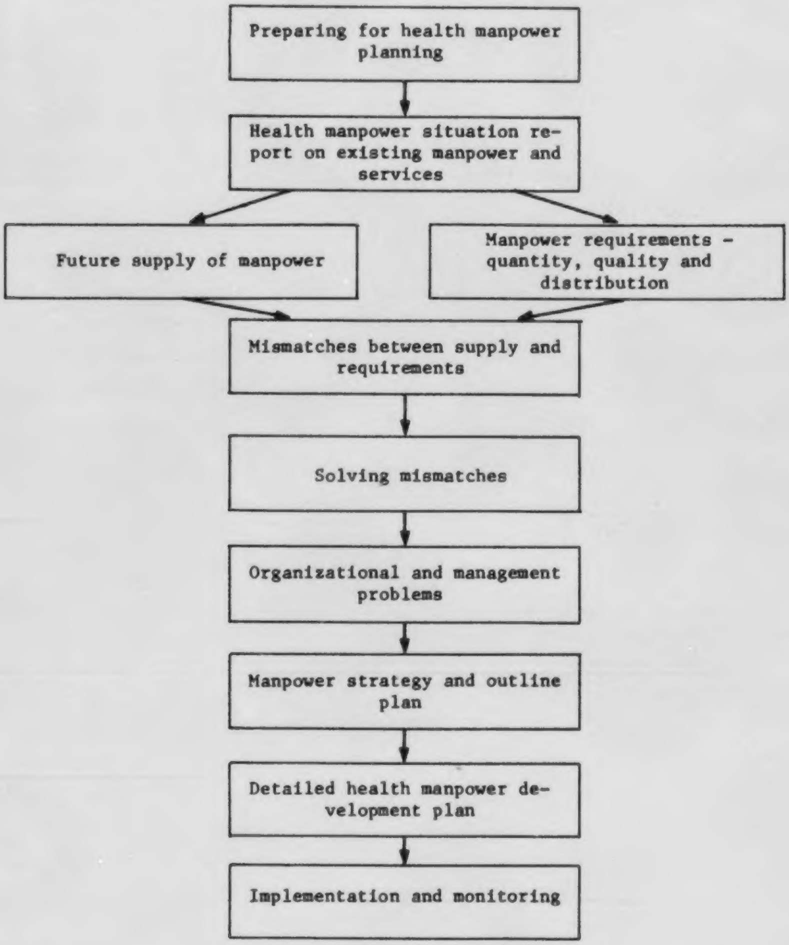
Notwithstanding the cyclical nature of manpower planning, health manpower planners have to prepare a manpower development plan within certain time constraints. To do this, they follow a set of steps that enable them to achieve the desired outcome of a plan. Figure 2.1 suggests a set of steps to be followed in health manpower planning. The steps are presented in a linear sequence in this course. However, certain adjustments may be needed in the process of an actual planning activity; some of the steps, for instance, may be omitted from the proposed sequence, and it may be necessary to move repeatedly between other steps.

Although planning is cyclical by nature, it is here presented as a set of logical steps to be followed in an approximately linear sequence.

Step 1: PREPARING FOR HEALTH MANPOWER PLANNING

Ideally, health manpower planning begins when a government or organization decides to undertake it in conjunction with national health planning or country health programming. When such a decision is made, government policies about areas of concern and the expected outcome must be developed for the manpower planning group. The timetable of the health manpower planner and the sequence of reporting should also be established at the outset.

Figure 2.1. PROCEDURAL STEPS IN HEALTH MANPOWER PLANNING


Preparing for health manpower planning
Health manpower situation report on existing manpower and services
Future supply of manpower
Manpower requirements - quantity, quality and distribution
Mismatches between supply and requirements
Solving mismatches
Organizational and management problems
Manpower strategy and outline plan
Detailed health manpower development plan
Implementation and monitoring

The group of health manpower planners should include representatives of health services organizations, health manpower development institutions, professional bodies and other interests. At the same time, a steering committee to whom the health manpower planning group would report should be convened. The steering committee should consist of high-level decision-makers who have sufficient authority to implement the plans.

Appoint an HMP working group with staff drawn from the relevant interested bodies.

The health manpower planning group as part of the prelude to the actual technical planning activities should make themselves fully aware of the country's political orientation and long-term social and developmental priorities. If the working group does not have sufficient policy direction, social and health policy issues should be clarified. It is essential that before planning begins, the health manpower planning group should understand the government's position on such critical issues as:

- long-term demographic projections,
- health priorities, and
- health resources.

The HMP working group should be made fully aware of all social and health policies and issues.

The positions of different pressure groups concerned with the health manpower development process should also be understood.

WHAT ARE THE STEPS IN THE PLANNING PROCESS ?

Information about health services and manpower development must first be collected and presented. Data may be collected either by the working group or, in advance, by any other group that has access to data sources. Sometimes a manpower information document or situation report may be provided to the working group so that they can begin their planning activities further along in the planning process. It is, however, more normal for them to start with raw information which they must convert into a form suitable for the later stages of the planning process.

Step 1: HEALTH MANPOWER SITUATION REPORT ON EXISTING MANPOWER AND SERVICES

The HMP groups should be selective in information collection; seek only what is relevant to the questions in hand.

Data collected for the information document/situation report should always be assembled with a specific purpose in mind. It should also be relevant to the needs of planning. Often, much information is collected that is not used later. A reasonable amount of carefully selected information is worth far more than a mass of data collected without purpose.

The process of collecting data should not be allowed to become unduly prolonged.

Data must be collected within a reasonable time. In particular, every attempt must be made to use the results of recent surveys, whether or not the results have been published. Launching special surveys to collect additional data should especially be avoided, as this dramatically extends data collection time and increases costs.

Expertise in such disciplines as medicine, statistics, demography and education should be represented on the team responsible for data collection and presentation. Team members should be familiar with existing data sources.

The most advantageous way of collecting HMP data is to do it along with health planning data.

If possible, manpower data collection should coincide with a similar process for health planning. If country health programming is being undertaken, the situation report it entails will include health manpower information. Combining health planning and health manpower planning will avoid duplication of effort and the possibility of contradictory conclusions. Very little additional effort should be needed to collect health manpower planning information on top of the information needed for health planning.

HMP will require basic information under a number of different headings.

Information that should be collected during the data collection phase includes:

- background information on the country;
- the fiscal situation and trends in national, provincial and local budgets;
- present health status and trends;
- present health services and trends;
- national health plan, if it exists;

- present staffing situation and trends;
- training institutions;
- personnel policies; and
- the use of staff.

Session 3 will deal in greater detail with the nature of data collection and its consolidation into a situation report.

Step 3: FUTURE SUPPLY OF MANPOWER

The future supply of manpower will be based on the availability of current staff, the rates of leaving and future additions to the staff. The existing staff will also shift from one category to another due to movements within (i.e. promotions) and between organizations (i.e. transfers). It will be depleted by departures from the organization, deaths and retirements. Additions to the staff will result from staff moving from other organizations or sectors, and the training and recruitment of newly qualified staff.

Baseline manpower projections of future staff are from current staff in post, combined with estimates of additions and losses assuming no changes in policies.

The health manpower planning working group should first attempt baseline projections of the likely availability of staff in the future, based on the situation report. The current situation, expected future losses and additions provide the basis for this estimate. Future losses will be based on the rates developed from past trends as modified by the judgements of the working group. Estimates of additions to the staff by movement from other organizations will be made through a similar approach, while data from training institutions, existing and planned, will provide estimates of newly qualified staff expected during the plan period.

Step 4: MANPOWER REQUIREMENTS - QUANTITY, QUALITY AND DISTRIBUTION

Future manpower requirements may be estimated in terms of quality, quantity, productivity and distribution of staff, using a variety of different approaches:

1. The health needs approach is based on expert opinion about the amount and nature of health services needed to attain and preserve the health of the people.

Four methods exist for determining requirements. The method(s) used will depend on national circumstances.

2. The service targets approach identifies targets for the provision of various kinds of health services based on diverse criteria of needs and feasibility; these services are then converted into the manpower needed to meet them.
3. The health demands approach estimates the effective demand for services as a function of income, price, accessibility, etc.
4. Manpower population ratios, using desirable or empirical normative ratios, are based on diverse criteria.

In reality, the working group may use one or a combination of these approaches to determine manpower needs. The availability of data and the country's political orientation and economic circumstances will also influence the approach(es) adopted.

At the same time that numerical estimates of manpower needs are being made, the skills needed by different categories of health workers must be identified. How health personnel will be distributed throughout the country and among different services should also be estimated.

Step 5: MISMATCHES BETWEEN SUPPLY AND REQUIREMENTS

Mismatch problems can be of a number of different types: number of staff, distribution, skills and/or productivity.

Having projected the future supply of manpower and manpower needs, the working group can compare the two. Such comparison will undoubtedly reveal mismatches between supply and requirements. There may be too few or too many of various categories of staff; needed skills may be lacking; productivity may be low; and there may be a geographic maldistribution of staff. Other manpower problems that hinder the delivery of health care will also be identified at this stage.

Many of the health manpower problems and their solutions will be interlinked and should not be treated piecemeal. Grouping the identified problems into broad categories will facilitate the consideration of similar problems together.

Problems considered by manpower planners will be country-specific. Some problems considered in one country may be irrelevant to planners in another country; where similar issues exist, they may be addressed differently from country to country. For example,, in one country manpower planners may feel it appropriate to suggest how to improve the management of training institutions, while, in another country, it may be left to the discretion of the institutions themselves.

Manpower problems are often country-specific and their solutions should also be adapted to suit specific national circumstances.

When the working group has identified the major problems, it must decide which problems it should consider and which fall outside its terms of reference.

Some manpower problems fall outside of the terms of reference of the HMP working group and should be excluded from further consideration.

Step 6: SOLVING MISMATCHES

Once the problems have been identified and broadly classified, the working group will propose solutions to them. As a first step to proposing solutions the working group should list all major alternative solutions to a particular set of problems without considering their feasibility. The initial solutions should be developed in "brainstorming" sessions, i.e., sessions in which all even remotely possible solutions should be at least mentioned, without prematurely narrowing the field of inquiry to only those thought to be readily feasible. For example, to increase public sector physician salaries may be a very unlikely solution to the problem of government physicians spending much of their time in private practice. Nevertheless this possible solution should at least be listed and given preliminary consideration in order to ensure that commonly held beliefs on what is feasible and practical are thoroughly examined. Ultimately, all health manpower problems identified in this step will have a quantitative dimension. The number of personnel with needed skills may be lacking while those with a different set of skills may be abundant. There may be too few pharmacists in rural areas as compared with urban areas, and so on.

"Brainstorming" is a first step to producing a list of potential solutions.

In any form of planning the solutions to problems are often interlinked. In health manpower

Solutions to one problem are often interlinked with solutions to other problems and this interlinking needs to be explicitly examined.

planning, the degree of relation between solutions is usually very high. Solving a particular problem may therefore facilitate or impede the solution of other problems. For example, rapidly training and recruiting staff may, in the long run, create problems of staff morale if no provision is made for a well-defined career development scheme. The planning group will thus need to identify the effect of particular solution possibilities across the whole spectrum of health service staff.

The starting point in selecting between solutions is to look first for long-term and resource-based solutions.

Selection between solutions is the next phase of the process and it is normal to first concentrate on solutions which are of a long-term nature, not requiring radical changes in policy or action, and which can be absorbed easily within the projected availability of resources. For example, new training institutions would be planned within the following limitations: capital funds available; the recurrent costs to be incurred; time for construction of new physical facilities; training and recruiting of additional teachers; and a sufficient pool of qualified candidates from which students are to be drawn.

Resource-based plans are usually long-term and stable since activities are planned in consonance with a harmonious growth of resources. The effects of these actions may not be visible for a very long time. A decade may elapse between the decision to establish a new medical school and the graduation of the first students.

Some long-term solutions will not meet the plan targets and either changes in the target will be necessary or stop-gap measures will have to be introduced.

At the end of this stage, it will be found that many of the resource-based solutions do not quite match the targets established in the original health plans. Some of these planning targets, consequently, will have to be changed. However, some planned targets may be based on political commitments of policy-makers. These politically sensitive commitments may not be modifiable. For example, a strong political commitment may have been made to establish a health centre in every district of the country in the next two years.

Planning may suggest, however, that sufficient staff for such centres will be available only after six years.

Target-based planning in some cases will override resource-based planning.

When confronted with such discrepancies, planners must re-examine the resource-based solutions. All the targets of the national health plan should be carefully compared with targets possible from the proposed long-term solutions. Where there are differences, planners must identify which are politically of high priority. Stop-gap measures will then have to be proposed for these high-priority targets so that the commitments can be met. In some cases, quality of services may be sacrificed. For example, the promised health centres may be built but be only minimally staffed until enough health workers can be trained. In others, resources may have to be diverted from other programmes.

Solutions need to be tested at this point for feasibility in terms of constraints and obstacles.

In making proposals for the solution of health manpower problems, each proposal at this stage must be scrutinized rigourously to ensure that in fact it is feasible. Constraints in the situation may make some solutions impossible to achieve. Other solutions may simply face obstacles that can be circumvented and are thus feasible.

Step 7: ORGANIZATIONAL AND MANAGEMENT PROBLEMS

The different manpower development solutions proposed by the working group will have certain organizational and management implications. These implications should be examined and, if necessary, the solutions modified to avoid creating new long-term problems. The major long-term implications to be assessed can be classified in five broad categories:

Further tests of potential solutions need to be made in terms of their long-term implications.

1. Coordination between health service development and manpower development. Each should not pursue its own independent path.

2. Educational planning for the training of health staff. Curricula and training methods should be relevant to the needs of services.

3. Effective management of health staff.

4. Career development prospects for the health staff.

5. Continuing education which supports career development and maintains and supplements the skills of the health staff.

It is often found, for example, that certain personnel policies block paths of advancement. After a number of years, these policies cause great dissatisfaction among staff. Some modifications of personnel policies can easily prevent the problem. By examining such long-term implications of the proposed solutions the working group will help to avoid such situations and, by so doing, may contribute significantly to the harmonious and coordinated growth of health services and manpower development.

Step 8: MANPOWER STRATEGY AND OUTLINE PLAN

The working group should now be ready to consolidate the whole manpower development strategy. By this point, long-term solutions will have been considered. In addition, the short-term effects of such solutions and their implications on the numbers, quality and distribution of staff will have been identified. The working group should now prepare the outline plan of the strategy to be followed. The manpower development strategy will encompass the sequence of actions to be taken to resolve mismatches between the supply of and requirements for staff.

An outline plan needs to be prepared to provide a basis for discussion and consensus with decision-makers.

By developing an outline plan and presenting it to the steering committee, the working group can obtain policy guidance before finalizing the detailed plan. This review serves two purposes:

- The members of the steering committee may have information that the working group does not have. Such information may lead to modification of the plan.

- Decision-makers on the steering committee will be participating early enough to contribute actively to the development of the manpower plan.

In this step, the resources needed, including the development budget and recurrent budgets, are estimated only approximately. If funding difficulties arise, the steering committee may determine priorities among the manpower development programmes contained in the outline plan and these will be applied in modifying the plan appropriately.

Statements of resource needs in the outline plan should be rough estimates only.

Step 9: DETAILED HEALTH MANPOWER DEVELOPMENT PLAN

When the steering committee approves the outline plan, the working group can develop the detailed plan. At this stage, the working group may be expanded to include persons who will be engaged in implementing the programmes and in budgeting. The working group may split into sub-groups, each charged with developing the detailed plan for a particular programme or aspect of the overall plan.

The HMP working group should be expanded during detailed plan development to include programme managers and finance staff.

However the working group chooses to undertake this final stage of plan development, continuous communication must be maintained between groups and with staff from the personnel, finance and budget departments, and other concerned bodies. Frequent coordinating meetings should be held. Adequate secretarial support will be essential at this step.

The solutions developed earlier will be broken down into two types of programme activities: developmental and ongoing. The developmental activities are aimed at improving the manpower system's potential; they are usually intensive and short. Expanding training institutions, and changing working procedures are examples of developmental activities. Ongoing activities are those that are usually performed routinely to maintain the system's potential.

The detailed plan should include programme developmental and ongoing activities clearly separated.

The schedule on which each activity will be performed should be determined. Networks of activities can then be developed. This will enable the group to decide which activities are critical. Milestones, or intermediate and final target dates, will also be established.

A schedule of activities should also be incorporated into the plan.

2.12

All the detailed programme activities will then be converted into resource requirements. Human, physical and other needs will be identified; the organizational patterns for the developmental activities must be outlined; and the costs of various activities must be estimated so that programme budgets can be developed. It is advisable to prepare separate budgets for developmental and ongoing activities, i.e., developmental and recurrent budgets. Too often, little attention is paid to the recurrent budget, with serious results. For example, a development budget establishing a training institution may be prepared, but the repercussion on future recurrent expenditures to run the institution may be ignored. Preparing separate budgets ensures that both types of expenditures are considered.

Separate budgets should be drawn up to identify developmental separately from recurrent costs.

The plan document should now be written and refined. This requires that, at the outset, all members of the working group must agree on the outline of the document. Its structure, of course, will vary from country to country depending on needs. It should nevertheless contain a summary of the major proposals. Many of the tables and much of the detailed information may be presented as appendices (annexes).

The health manpower plan document will vary in format from country to country but should contain a set of basic components.

The detailed health manpower plan should contain:

- the policy basis of the plan;
- the health service goals and targets;
- the problems of health manpower development;
- a listing and critical analysis of potential solutions;
- a breakdown of preferred solutions into their component activities;
- a set of scheduling networks to show the sequence of activities;
- the resources and time needed for each activity;
- the organization of teams to undertake the activities; and
- guidelines on the type of monitoring and frequency of evaluation and re-planning of the proposed programmes.

WHAT NEEDS TO BE DONE AFTER PLAN PREPARATION ?

Step 10: IMPLEMENTATION AND MONITORING

A plan, which is an instrument specifying a set of actions necessary to achieve a target, deals with the future. However, the future is fraught with so many uncertainties that even the most able planners will be unable to foresee all possible future events. For example, student unrest that interrupts training programmes can hardly be predicted. Since such events upset projections, a manpower planner must allow for the possibility of unexpected developments occuring and be prepared to modify the plan as circumstances dictate.

Uncertainties about the future during plan preparation will mean that the plan will need later modification.

Manpower planning is not finished when the final plan is produced. It must continue throughout a plan's implementation. As situations change, the plan should be adapted accordingly. To do this, the working group should devise ways for manpower planners to continue to interact with those responsible for implementing the plan. The plan document itself should specify how monitoring information should be used and what arrangements need to be made for the planning process to continue during implementation.

Planners should be involved in the implementation stage in order to facilitate re-planning or plan modification.

If the full potential of the planning process is to be realized and the plan used as an effective tool of management, decision-makers in the ministry must not just accept plan changes but rather expect them. It is for this reason that emphasis needs to be made in the detailed plan document on re-planning after plan implementation commences.

Methods of monitoring, evaluation and re-planning need to be emphasized in the plan document.

EXERCISES

EXERCISE 1. Procedural Steps for Health Planning and Health Manpower Planning

Elements of health planning and health manpower planning exist in every country. In your country, planning may have been formal, systematic and structured, or informal and irregular. In either case, some sequence of events will have taken place leading to a plan of future activities. List the activities or steps involved:

1) for preparing the health plan;

2) for preparing the health manpower plan.

Show how the steps for each type of planning are interconnected to steps in the other type.

EXERCISE 2. Organizing Health Manpower Planning

Assume that national health planning has been recently undertaken in your country. The Ministry of Health is now organizing a health manpower planning exercise to follow this up.

a. Draw up the terms of reference of the HMP working group.

b. Identify the institutions, organizations or agencies which should be represented in the HMP working group. State why.

c. Specify what other organizations or institutions the HMP working group should contact. Give reasons for your selection and indicate at what stage and in what way those organizations would be involved.

d. Assuming that a steering committee would be formed to provide an overview of the working group's activities, specify who should be members of that committee.

e. Draw up a planning schedule, including the approximate duration of each of the steps.

EVALUATION QUESTIONNAIRE FOR SESSION 2

Date________________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

	Not at all	Poorly	Fair	Well	Very well
1. Specify the sequence of procedural steps in health manpower planning.	☐	☐	☐	☐	☐
2. Identify the organizations and institutions which should be involved in HMP.	☐	☐	☐	☐	☐
3. Describe actions to take after plan is completed.	☐	☐	☐	☐	☐

2. Did you read any of the learning material before the session?

Not at all	A little	A fair amount	Most of it	All of it
☐	☐	☐	☐	☐

3. Was the learning material:

	Not at all	Somewhat	Fair	Moderately	Very
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

4. Did you find the illustrations:

	Not at all	Somewhat	Fair	Moderately	Very
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐

5. Did you find the exercises:

a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated

	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:

	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

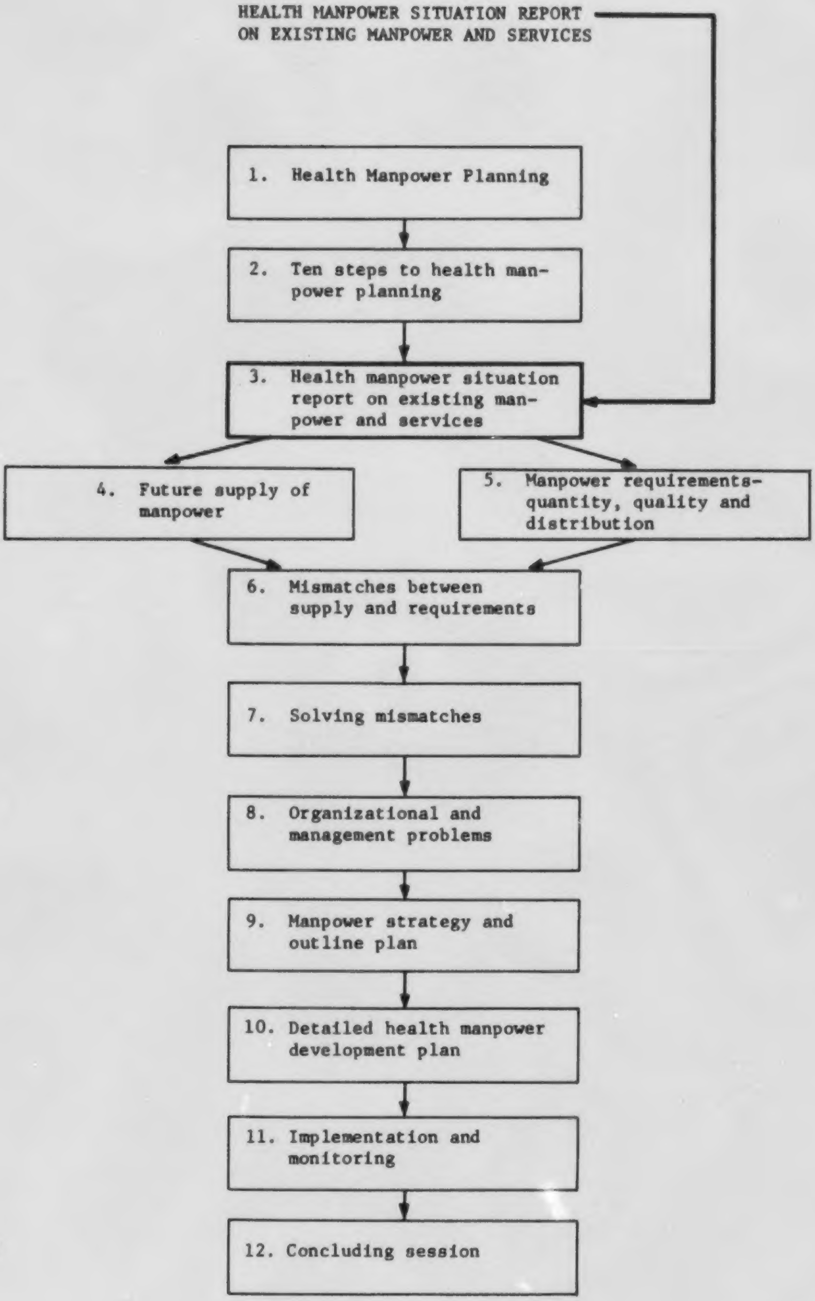
8. Do you have any other comments?

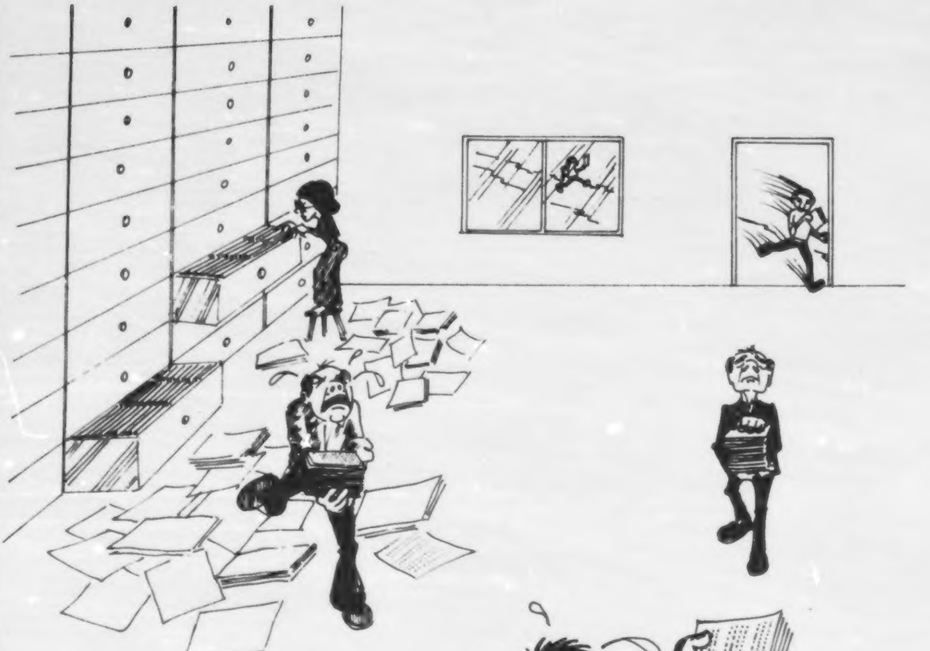
Name____________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION 3

HEALTH MANPOWER
SITUATION REPORT


HEALTH MANPOWER SITUATION REPORT ON EXISTING MANPOWER AND SERVICES
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session



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VOL. 5
VOL 6

PREPARING A SITUATION REPORT

SUMMARY

This session describes how to produce a Health Manpower Situation Report (HMSR). The HMSR document is complementary to the description of the overall health situation which introduces a health planning report. The structure of the HMSR should closely follow both the structure of the health planning report (to make cross-referencing easier) and the level of detail it uses (so that the manpower aspects of each item in it are available).

A manpower planning study, like any other planning study, has the overall aim of collecting information for the planning decisions which must be made. The approach described in this session offers a way of identifying the information about current manpower, staffing and training in the country worth collecting. It suggests a method of ensuring that resources are not wasted in collecting information which may be interesting but of little practical value.

The HMSR is intended to provide information on:

- current staffing levels;
- trends in staffing levels;
- other information on the characteristics of present staff, e.g. leaving rates, age structures, performance; and
- training.

The manpower planner has to decide how much information on these topics should be included in the HMSR. This decision must be made in the light of how important the information is, whether it is already available or how much it would cost to collect.

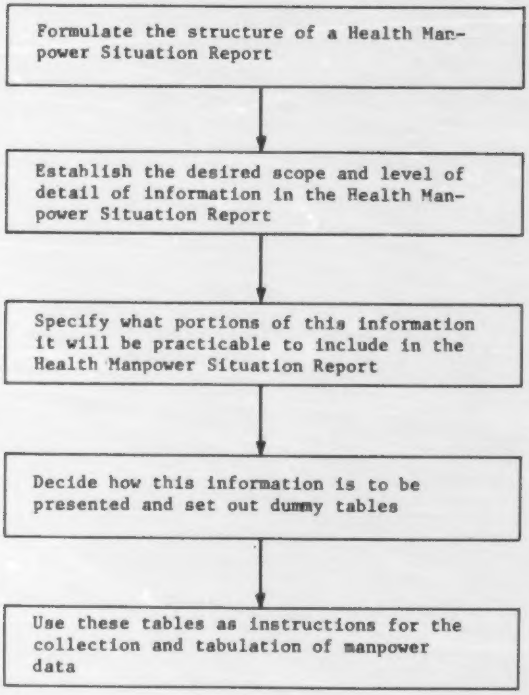
Alternate ways of presenting HMSR information can be used. The process of identifying how the information should be presented is in itself useful as it serves to identify more precisely what information is actually needed.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Specify the nature and purpose of a Health Manpower Situation Report (HMSR).
2. Specify the minimum essential manpower data to collect for an HMSR.
3. Construct a framework for an HMSR for use in National Health Planning and Health Manpower Planning.

SESSION STRUCTURE



Formulate the structure of a Health Manpower Situation Report

Establish the desired scope and level of detail of information in the Health Manpower Situation Report

Specify what portions of this information it will be practicable to include in the Health Manpower Situation Report

Decide how this information is to be presented and set out dummy tables

Use these tables as instructions for the collection and tabulation of manpower data

LEARNING MATERIAL

WHAT IS A HEALTH MANPOWER SITUATION REPORT ?

Manpower information is normally needed at two stages of a national health planning (NHP) process:

Manpower information is required at two stages of the health planning process, early and later.

(a) early in the process when reviewing the country's current health situation. (The health planning report usually begins with a section setting forth the health situation and emphasizing its more important aspects; an important element of this section should be a review of current health manpower resources.)

(b) at a later stage, in considering the relative benefits and costs of alternative policy options. (These choices are reviewed and some are adopted in the health manpower plan; at this stage, the focus is on projected health manpower resources.)

This session concentrates on the manpower information required early in the health planning process to review the country's current health manpower situation. (This information will also be used later as a basis for projecting what will happen in the future.) This review of the current health manpower situation is usually known as the Health Manpower Situation Report (HMSR). Its purpose is to depict the country's current health manpower situation so as to complement the health situation described in the health planning report.

Health Manpower Situation Report (HMSR): a picture of the current manpower situation in the context of the overall health situation.

HOW SHOULD THE HMSR BE ORGANIZED ?

It is important that the structure of the HMSR should reflect, or at least follow closely, the structure of the introductory section of the health planning report. That section

Health Manpower Situation Report should parallel closely the health planning report.

should contain the manpower information in respect of any health programme considered in the review of the current health situation. For example, if the malaria programme, family planning services, and the regional disparities in health services are all to be emphasized in the health plan, the manpower planner should emphasize these aspects of health manpower as well. It is preferable to combine the two reports and produce one document; manpower information may then be included in each section or topic of the health planning report.

HMSR requires maintaining close contact with health planners.

If the health planning report and the HMSR are to be produced at the same time, the manpower planner must promptly establish and maintain close contact with health planners. He will then be aware of items to be covered in the introductory section of the health planning report and what aspects of those items will be highlighted. This will help him plan to collect corresponding manpower information. If manpower planning begins after the health planning report is produced, the manpower planner's task will be somewhat easier, for he will already have a structure to follow.

HOW DETAILED SHOULD THE HMSR BE ?

The scope and level of detail of the HMSR is a matter of judgement but should usually parallel that of the health planning report.

The scope and level of detail presented in the HMSR is a matter of judgement. First, the detail should correspond fairly closely with the introductory section of the health planning report. If the health planning report gives detailed information by programme, service, client group, region, etc., the HMSR should also contain that detail.

Beyond this, other necessary decisions include:

(a) What information will be provided about current staff levels? (If it is available, a breakdown by grade, function, age, sex, full-time/part-time (FT/PT) would be valuable.)

(b) What information will be provided about current trends in these factors? (If the average age of staff in a particular category is decreasing rapidly and the proportion of part-time female staff in this category is increasing, both changes are potentially important and should be covered by data.)

(c) What qualitative manpower information should be provided? (Although staffing levels in a particular category are in accord with the target, for example, the turnover rate may be high. Experienced personnel are thus replaced by newly trained staff. This leads to a situation where posts are filled but few staff have the necessary experience to perform their tasks well.)

WHAT TYPES OF INFORMATION SHOULD BE INCLUDED ?

Selection criteria for information, importance, use and availability.

The basis for judging what to present among these different types of information must be:

(a) What topics are important considering the content of the health planning report, the potential problems the manpower information reveals, and, most important, the potential value in using the desired information?

(b) What information is already available? What is the cost of collecting extra information?

The items of information to be included in the HMSR once decided upon, are usually grouped under five main headings:

(a) Level at which services are provided.

Information should include manpower supply at level at which services are provided.

This information can be used to highlight shortages or imbalances in providing health care. Some items may already be included in the health planning document. Examples include the following (staff numbers may be expressed in FTE's* actually delivering health services to the population):

- crude manpower to population ratios (e.g., number of staff per 10 000 population);
- ratios of manpower to target (or client) population (e.g., number of midwives per 10 000 women in the 15-45 age range, or number of midwives per 100 births annually);
- manpower to equipment ratios (e.g., hospital nurses per 10 beds, radiographers per x-ray machine, health workers per rural health centre);
- geographical distribution (e.g., numbers or population ratios of health staff in each region or type of location according to manpower type, specialty, client group, etc.).

(b) Characteristics of staff in post.

Staff characteristics need to be included in the information base.

This information gives a more detailed picture; it may highlight symptoms of potential difficulty (e.g., a large proportion of older staff nearing retirement, or of young and relatively inexperienced staff, indicates poor age distribution; too many or too few supervisors may reflect an imbalance in the grades). Examples of variables include numbers of FTE staff, numbers of staff by employment status (full-time, part-time), sex, age, primary function (service, administration, research, teaching).

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*FTE = full-time equivalent personnel. This unit is used to adjust for the frequent situation in which staff do not work full-time at a specified task or job. For example, physicians in a given maternal and child health programme may contribute, on an average, only three hours daily to this activity. Without taking this into account, tabulations of the number of physicians so employed would give a distorted picture. Accordingly, the total number of hours allocated to an activity is divided by the average number of hours a full-time person is expected to (or actually does) work. The result is expressed as FTE personnel.

(c) Staff productivity.

Staff productivity, a vital dimension of the manpower data base.

Productivity information shows how well staff are used and how productive they are. Well-trained and fairly distributed staff contribute nothing as such; only when staff work on relevant problems can they promote and maintain good health. Possible indicators of this important but elusive dimension include:

- numbers and types of services provided per unit of time and as a function of personnel type and mix (e.g., inoculations per day, X-ray films per month);
- assessment of relevance of services to major health problems;
- proportions of time spent on service activities, on support activities, and on other activities.

(d) Rates of movement.

Changes in employment status and/or of employee characteristics also provide important information.

This information can show trends in staff levels, and possible reasons for low productivity. Examples:

- leaving rates for any of the groups listed under (b) (e.g., by grade, FT/PT, sex, age);
- different types of leaving rates (e.g., change of job, marriage, pregnancy, retirement, death or dismissal);
- recruitment rates for any of the groups listed under (b) (e.g., by grade, FT/PT, sex, age);
- recruitment rates for each main source except training courses (e.g., from employment elsewhere, from domestic activity).

(e) Training.

Capacities and characteristics of training programmes complete the basic information requirement.

Usually, training institutions are by far the most important source of new staff; therefore they are considered separately. Examples of training information include:

- types of training available (e.g., courses in different nursing specialties);

- numbers of applications for admission and, if relevant, their sources, broken down into "applicants from outside the health service" and "applicants from within the health service":
- annual enrolment capacity (the number of places filled each year, and how many additional places could be available);
- drop-out rate (total of trainees voluntarily leaving training, plus those failing examinations);
- destination (e.g., first job after qualification).

Not all items of manpower information will be used; the planner should limit his list to the truly important.

The above list includes many more items of information than are likely to appear in any HMSR. The examples given cover a wide range of possibilities, and so the particular information needed must be carefully selected. Identical information should be reduced to the simplest terms. If, for example, all staff in a particular grade have the same qualifications, are all full-time, and are all men, the number in the grade will be sufficient to cover these other items as well. Other items may be irrelevant, or data may change too rapidly to be useful.

Before proceeding to collect and analyse data it is essential to verify that they are indeed relevant to the problems under consideration.

Most of the discussion on this point has been directed at data requirements and the linkage of the HMSR to health planning. The amount of relevant data that could be collected far exceeds the capacity of even those countries with highly developed statistical and planning capabilities. Before collecting any data, the prudent planner will first determine whether the proposed information will aid in understanding the health manpower situation, identifying potential problem areas, or suggesting possible solutions. Only if the data pass this test of relevance should the planner collect the information.

HOW SHOULD HMSR INFORMATION BE PRESENTED ?

Classifications employed by external bodies should be used wherever appropriate for tabulating data.

In collecting manpower information, it is very desirable to work within the existing framework of classifications, divisions, etc., which are readily recognized in the ministry and in the country. For example, the geographical areas chosen should, as far as possible, be consistent with existing administrative, topographical, political, or economic divisions. There are two reasons for this:

(a) information from sources external to the health sector is more readily available and is also more easily recognizable (and acceptable) by senior administrators;

(b) information collected outside the health field (e.g., demographic data or economic data such as levels of unemployment or income per capita) is easier to use.

Indeed, if information from sources outside the health sector is important, these sources often determine the groupings or classifications imposed on information collected from within the health services.

If the HMSR structure parallels the health planning document it will facilitate linkage of the two documents as well as data collection.

Although the headings of the HMSR should closely follow those in the health planning document, the manpower planner must still decide how to arrange and present his material under each of these headings. For example, if one section of the health planning document reviews family planning services, the manpower planner, after presenting an overview of the whole service, may deal with the detail of each grade in turn (e.g., physicians, nurses, district family planning officers, family planning supervisors, health assistants, health aides). Or he may deal with factors which cover several grades, such as geographical distribution of all grades or age distribution of all grades.

There are two reasons for carefully considering the detailed structure of the HMSR at this stage.

The first is to ensure that useful manpower information is easily available to the readers of the health planning document. The second is that, if the structure of each section of the HMSR can be settled early, data to be collected can be specified, as can statistical material to be set out in tables or other diagrams. The structure can therefore be used as instructions for statistical or clerical staff. When seeking information from other groups in or out of the health service, the structure can specify the form and level of detail of the information needed.

The basic approach to organizing or structuring the way that manpower information is presented is described below.

Basic approach to organizing manpower data: treat each manpower category in proper relationship to all others.

Each factor (geographical, grades, qualifications, etc.) is used as the basis for further subdivision of the national data. For example, a chapter of the HMSR on family planning staff would contain one section on each geographical area in the country. Within each of these sections would be a subsection for each grade of staff. Each subsection would be further subdivided by the different qualifications of each grade, and so on. This example is represented diagrammatically as follows:

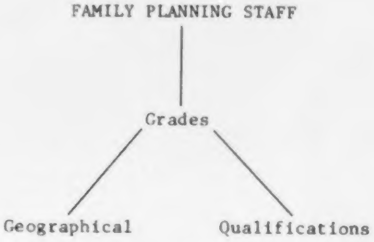
FAMILY PLANNING STAFF
|
Geographical
|
Grades
|
Qualifications

The basic approach provides sufficient detail but may be confusing and unwieldy.

The advantage of this approach is that any level of detail contained in the original data can, with sufficient effort, be extracted from the tables in the report. Its main disadvantage is that it presents in a cumbersome form a mass of detail that may be difficult for the reader to comprehend.

Generally, however, the presentation of manpower information that achieves the best balance between level of detail and ease of comprehension uses a modification of this approach. The example given above for family planning staff would then be shown diagramatically as follows:

Best to modify this approach.



The statistical material corresponding to this diagram that would appear in this section of the report would be set out as in Tables 3.1 and 3.2.

Example of the combined approach.

Table 3.1. GEOGRAPHICAL DISTRIBUTION OF STAFF

Grade	N. Region		E. Region		W. Region		Total	
	Number	%	Number	%	Number	%	Number	%
I	235	23.0	150	9.5	42	6.2	427	13.0
II	252	24.7	402	25.4	284	41.8	938	28.6
III	534	52.3 100.0	1029	65.1 100.0	353	52.0 100.0	1916	58.4 100.0
All grades	1021	31.1	1581	48.2	679	20.7	3281	100.0

Table 3.2. QUALIFICATIONS OF STAFF

Grade	Qualifications					Total
	1	2	3	4	5	
I	271	156	-	-	-	427
II	42	478	418	-	-	938
III	-	-	31	72	1813	1916
All grades	313	634	449	72	1813	3281

Each table in the section includes a total column which shows the reader the common origin of the numbers presented.

A diagram for each chapter of HMSR is desirable. It ensures presentation of the relevant material and helps in the design of the presentation itself.

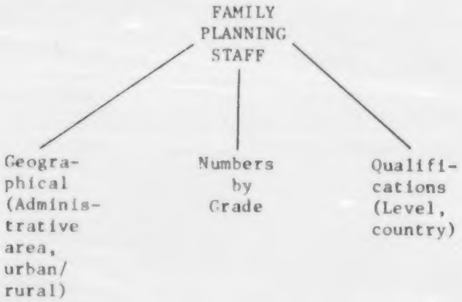
The HMSR should be planned by drawing at least one of these diagrams for each chapter for the following reasons:

(a) It ensures that the basic statistical reference data the manpower planner wishes to cover in the HMSR will be presented;

(b) It helps to design a way of presenting the manpower information that will be readily understood by the reader;

(c) It provides a specification for the manpower information to be collected and the corresponding tables to be produced.

An approach to the collection of manpower information which is sometimes used, but which is not recommended, is to collect information about each factor in turn, without reference to the others, e.g., if the information in the HMSR on family planning staff had the following structure:


FAMILY PLANNING STAFF
Geographical (Administrative area, urban/rural)
Numbers by Grade
Qualifications (Level, country)

This approach has the advantages that the information is relatively easy to collect and present, and each table or diagram is fairly small. But it has the major disadvantage that it usually does not provide enough detail. Statistical data on problems that relate to more than one factor, e.g. geographical distribution of different grades, cannot be conveniently presented, and if the information is collected by each factor separately this more useful level of detail will not be available in any case

Finally, the manner in which data in the HMSR is presented is critical to ensuring that the issues become clear to decision-makers and planners alike. Thus it is essential to exclude from tables any irrelevant detail. The basic rule here is that no row or column should be included in the table unless it bears directly on the comment or argument which follows.

Data presentation is critical. Tables should be reduced to only those elements that contribute to the point being made.

3.12

The following tables are shown as examples of bad and good presentations. The need for the information presented in the tables arose from a general feeling within a Ministry of Health that while most doctor posts in medical institutions were filled, i.e. officially held with the doctor drawing the corresponding salary, there was a significant number of posts in which the doctor concerned was not physically present to carry out his tasks (i.e. the post was filled but not manned). Information was collected and the following table drawn up and presented.

Table 3.3. MANNING LEVELS OF DOCTORS BY REGION AND GRADE

		Posts Sanctioned		Posts Filled		Posts Filled on Deputation (Secondment)		Posts Filled but not Manned		Posts Filled and Manned	
		A		B		C		D		E=B+C-D	
		No	%	No	%	No	%	No	%	No	%
	TOTAL	510	100	412	81	34	7	94	18	352	70
REGION	EAST	74	100	59	80	13	18	10	14	62	84
	CENTRAL	326	100	267	82	9	3	62	19	214	66
	WEST	58	100	45	78	10	17	9	16	46	79
	FAR WEST	52	100	41	79	2	4	13	25	30	58
GRADE	GRADE I	50	100	44	88	0	0	2	4	42	84
	GRADE II	164	100	113	69	8	5	28	17	93	57
	GRADE III	296	100	255	86	26	9	64	22	217	73

This first table is a poor presentation. While it contains the numbers which identify the size and location of manning deficiencies, it also contains many other numbers as well which are irrelevant to the main point and confuse the reader. The table was subsequently redrawn and presented as follows:

Table 3.4. MANNING LEVELS OF DOCTORS BY REGION AND GRADE

		Posts Sanctioned	Posts Filled and Manned	
		No.	No.	%
	TOTAL	510	352	70
REGION	EAST	74	62	84
	CENTRAL	326	214	66
	WEST	58	46	79
	FAR WEST	52	31	58
GRADE	GRADE I	50	42	84
	GRADE II	164	93	57
	GRADE III	296	217	73

The second table focusses the reader's attention and clearly identifies that manning problems exist, most sharply in the Central and Far West regions and in the Grade II staff. The first table contained the same numbers, but it also contained many other numbers as well which have been excluded from the second version without affecting at all the point being made.

EXERCISES

EXERCISE 1. Preparation of an HMSR

One of the most important aspects of an HMSR is the way the material is presented so that important factors in respect of a particular category of staff are given due prominence and are not buried in irrelevant detail. This exercise provides an opportunity to plan the collection and presentation of information relating to a particular category of staff.

1. Select a category of staff likely to be important in the next national health plan. This could be:

    (a) a type of health worker (e.g., doctors, auxiliary health workers);

    (b) all health workers in a particular type of place (e.g., an administrative region, all rural areas);

    (c) all health workers giving service to a particular client group (e.g., expectant mothers and young children, the old); or any other major staff category of potential importance.

2. What major aspects, such as geographical distribution, demand, qualification/skills, loss rate, volume of training, productivity, etc., do you think are likely to be of interest with regard to your selected group of staff and why (see page 3.3)? You may find it helpful to use the information categories presented in the learning material as a check-list. Do you think some of the factors you have chosen will be more important than the others? Divide your list into two or three groups according to level of importance of the desired information. Each important factor should provide a separate section of the HMSR. Based on these groupings, rough out a structure for

a section of the HMSR dealing with this staff. You may find it convenient to represent this structure diagrammatically as shown in the learning material.

3. Your HMSR presentation must be backed by statistical data at various points. Using your structure, suggest two statistical tables you think should be included in the presentation. Support your suggestions with statements indicating how the proposed information could contribute to decision-making.

4. Outline the data to be collected in order to produce the statistical tables you have suggested. How do you think these data could be best collected and how costly and time-consuming would this be? For example, which items are already available, which could be collected easily, and which would need a special survey of other methods of collection?

EXERCISE 2. Linking the HMSR to Health Planning

For a Health Manpower Situation Report (HMSR) to be of most use and give a good return for the effort invested in it, it should complement and enhance the situation analysis produced in the initial stages of health planning. This means that there must be sufficiently close contact between those working in the two areas. This exercise asks you to consider how this important relationship should be developed and maintained. Assume your planning group has been charged with the task of producing an HMSR for your country's health plan.

With which individuals should you seek to establish contact? How would you justify this choice in terms of their level, function, tasks, work load, or any other factors that seem important to you?

EVALUATION QUESTIONNAIRE FOR SESSION 3

Date________________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

	Not at all	Poorly	Fair	Well	Very well
1. Specify the nature and purpose of a Health Manpower Situation Report.	☐	☐	☐	☐	☐
2. Specify the minimum essential manpower data to collect for an HMSR.	☐	☐	☐	☐	☐
3. Construct a framework for an HMSR for use in National Health Planning and Health Manpower Planning.	☐	☐	☐	☐	☐

2. Did you read any of the learning material before the session?

	Not at all	A little	A fair amount	Most of it	All of it
	☐	☐	☐	☐	☐

3. Was the learning material:

	Not at all	Somewhat	Fair	Moderately	Very
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

	Not at all	Somewhat	Fair	Moderately	Very
4. Did you find the illustrations:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐
5. Did you find the exercises:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

	Too little	Less than needed	About right	More than needed	Too much
6. Did you find the time allocated					
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

	10	20	30	40	50	60	70	80	90	100
7. If you were organizing this session, what percentage of time would you allocate to:										
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

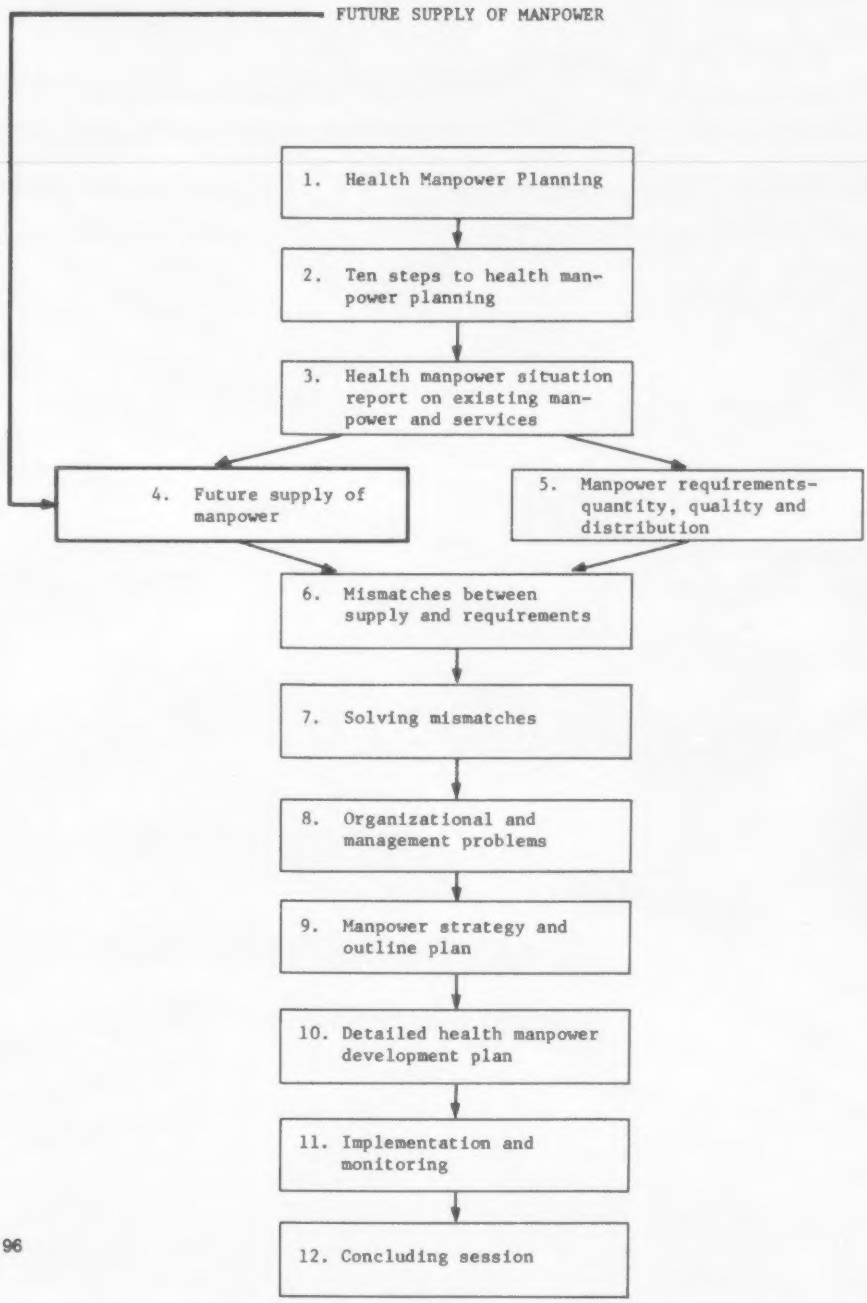
8. Do you have any other comments?

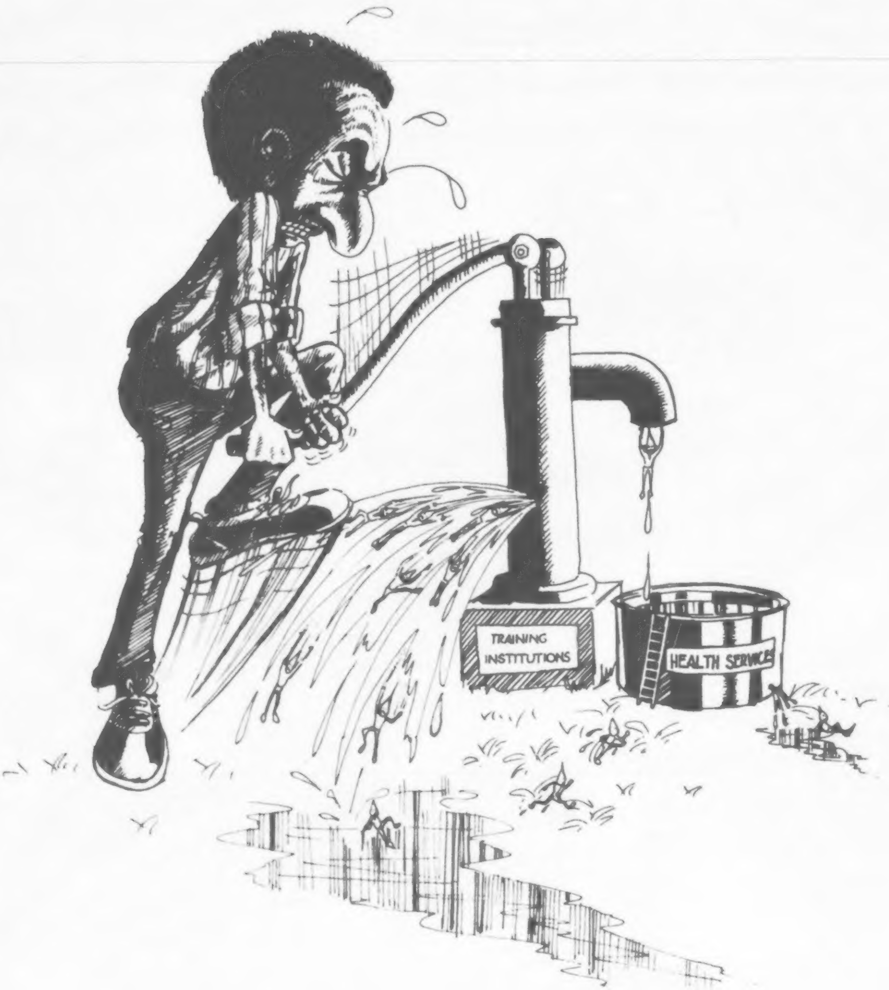
Name________________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION 4

FUTURE SUPPLY
OF
MANPOWER


FUTURE SUPPLY OF MANPOWER
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session


TRAINING INSTITUTIONS
HEALTH SERVICES

MANPOWER FOR THE FUTURE

SUMMARY

A manpower supply projection starts with an estimate of the current supply within a defined geographic, institutional or other area. This estimate is then adjusted to take into account anticipated additions to and losses from the supply in the future. These include intersectoral movements, and it is often useful to indicate the major sources of entrants and the reason for loss.

Four major sets of factors affect the rate of movement into and out of the manpower supply. They are specific to the professional category under consideration, to the individuals concerned, to the job, and to the political/social/economic context of the country or region. The main factors affecting manpower movements must be identified if projections are to be accurate and policies for change are to have effect.

Some factors are outside the control of the decision-makers in the health service, and their future effects must be forecast. Others can be controlled by the implementation of health manpower policies. The formulation of the correct manpower policies can be greatly aided by manpower supply projections. Information on recruitment and leaving rates is important, both as a basis of manpower projections and to monitor the implementation of manpower policies.

One of these projections, the Baseline Projection, calculates what will happen if no new initiatives are taken by the health service managers - the "undisturbed future." This projection is used as a baseline or reference supply estimate, against which projected manpower needs and alternative supply projections can be compared. From these comparisons, the planner can determine whether the supply must be modified, and, if so, the likely costs and effects of his major options.

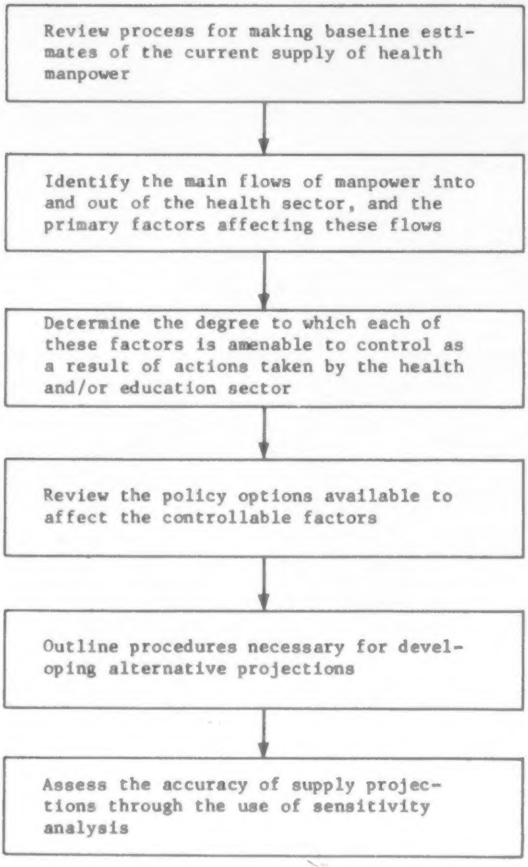
The baseline projection, like any projection, is subject to the uncertainties of the future. "Sensitivity analysis" can help the planner identify the most likely sources of uncertainty so that their effects may be reduced as much as possible.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Specify the three main components of a manpower supply projection.
2. List the primary sources of information used for each component.
3. Identify the main factors affecting gain and loss rates for the principal manpower categories.
4. Specify which of these factors are controllable and which are not.
5. Describe two methods of estimating manpower losses.
6. Prepare supply projections for a given type of manpower.
7. Conduct a sensitivity analysis of a manpower projection.

SESSION STRUCTURE


Review process for making baseline estimates of the current supply of health manpower
Identify the main flows of manpower into and out of the health sector, and the primary factors affecting these flows
Determine the degree to which each of these factors is amenable to control as a result of actions taken by the health and/or education sector
Review the policy options available to affect the controllable factors
Outline procedures necessary for developing alternative projections
Assess the accuracy of supply projections through the use of sensitivity analysis

LEARNING MATERIAL

WHAT ARE SUPPLY PROJECTIONS ?

The word "supply" has various meanings according to the adjective that qualifies it. Examples include: "current supply," or manpower available at present; "future supply," or manpower likely to be available for service at some future time; "active supply," or manpower that is employed in the field for which it has been trained; and "potential supply," which includes both the active supply of manpower plus those qualified to work in the field under consideration but who are not now employed. Mostly, without further qualification, the word "supply" refers to those who are employed in the occupation or category under consideration.

The term "manpower supply" generally refers to the number of people who are professionally active in occupational category, but it can have other meanings.

To assess whether the future levels of health manpower will be adequate to achieve future health objectives, some projections (estimates) of the future supply of health manpower are essential. Several types of projection are used. The baseline projection is an estimate of the likely supply of manpower at some future time, assuming no new changes are made in the manpower system. A baseline projection is usually the first comparison with a projection of likely manpower needs, and indicates whether manpower production and supply policies will need to be modified. Alternative projections estimate the likely supply of manpower on the basis of making certain changes in present policies and other factors that could affect manpower gains and losses. These alternative projections are paper exercises used to test how various changes in policies will have an impact on the future supply of manpower and on the feasibility of bringing supply and demand projections into balance.

Supply projections are essential to manpower planning. The baseline projection assumes no significant changes in supply policies beyond those already in place, while alternative projections assess the impact of various policy options on manpower supply.

4.2

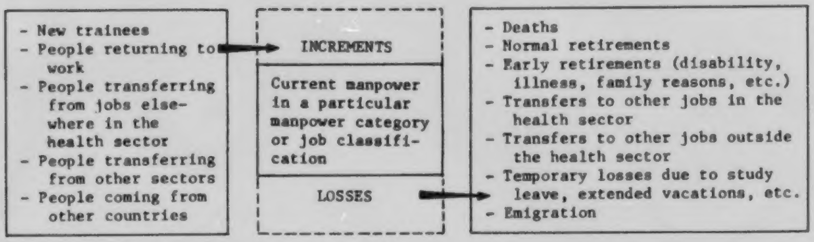
Supply projections are generally made for one or more years. The choice of a projection period will depend on various factors, including especially the length of the plan period and the amount of time necessary to see the effects of changed, supply policies.

Supply projections are usually made for one year or more, the length of time depending on factors such as the length of the planning period, how long it takes policy changes to have a noticeable effect on supply, the degree of precision sought, and the period for which one must estimate needs. Without further specification, and given the rather long period needed to make supply changes, projections must usually be made for at least five years. For some professions such as medicine, where there is a long interval between instituting changes to affect the production of physicians and seeing their effects, projections may need to be made for up to 20 years or more. Moreover, when major changes in the rate of training are planned, supply projections may have to be extended well beyond the target year to avoid a subsequent surplus or deficit. In manpower planning even rough calculations are valuable for establishing the limits of practicable changes.

Projected supply: current supply plus anticipated increments minus anticipated losses.

A manpower supply estimate is conceptually simple: people who are employed in a defined occupation and in a defined geographic area, institutional system, etc., are counted or their numbers are estimated by other means, and their characteristics noted. This current supply is then modified, year by year, to take into account anticipated increments to any losses from the current supply, to derive the projected manpower supply. Figure 4.1 presents the main sources of increments to the manpower supply and the usual reasons for loss.

Figure 4.1. MANPOWER SUPPLY


- New trainees
- People returning to work
- People transferring from jobs elsewhere in the health sector
- People transferring from other sectors
- People coming from other countries
INCREMENTS
Current manpower in a particular manpower category or job classification
LOSSES
- Deaths
- Normal retirements
- Early retirements (disability, illness, family reasons, etc.)
- Transfers to other jobs in the health sector
- Transfers to other jobs outside the health sector
- Temporary losses due to study leave, extended vacations, etc.
- Emigration

Manpower (referred to as "staff" for the rest of this session) may be recruited to serve in the particular health programme or unit under consideration from either outside the health sector or elsewhere in the health sector. Staff may also leave the staff category under consideration for posts elsewhere in or outside the health sector. Internal movements are important since expanding one part of a health service can drain other parts. Overall balance within a health service is important, and is provided for in planning by including internal flows in manpower projections.

Movements of staff affecting supply may be internal to the health sector or external to it.

External movements should be classified to show the important sources of recruits and destinations of leavers (often corresponding to reasons for leaving). These are, mainly:

- private health sector (for recruits and leavers);
- other employment sectors (for recruits and leavers);
- not in paid employment (for recruits and leavers);
- other countries (for recruits and leavers);
- school/university (for recruits only);
- retirement, death, dismissal (for leavers only).

External movements should be classified according to source or destination.

Information on "sources of recruits" is, for the most part, readily available, especially since new graduates of training programmes tend to represent the largest single source of supply increments. Such information is often not available, however, about the "destination of leavers", and a special study may have to be made to identify the major reasons for loss. When information on losses is sought the primary objective is to estimate their size, and the secondary objective to discover the distribution of losses by major destination category such as "other jobs", "other countries", "early retirement", "study leave", and "losses due to death, disability and illness".

Information on the sources of new recruits is usually available, though information on the destinations of leavers or reasons for loss may be more difficult to obtain.

4.4

WHAT CAN WE CHANGE AND WHAT MUST WE PUT UP WITH ?

The whole purpose of undertaking supply projections is to help identify what changes, if any, need to be made to current policies and programmes. It is therefore important even at this early stage, to recognise what in practice can be changed to alter manpower supply, and what cannot.

Characteristics or factors which affect the rate of movement of staff into or out of the supply pool are:

- *professional/technical characteristics;*
- *personal characteristics;*
- *job characteristics;*
- *social, economic, and political factors.*

The rates at which staff flow into and out of the supply pool are affected by the following four main groups of factors:

a) Professional/technical characteristics of staff and their training, e.g., general educational qualifications, professional qualifications, prior experience. Entrance to some health professions often demands specific prior experience or qualifications.

b) Personal characteristics of staff, e.g., sex, age, full- or part-time, length of service, marital status. Many studies have shown that leaving rates depend very much on the first three characteristics and to some extent on the other two.

c) Job characteristics, e.g., functions, tasks, pressure of work, location, salary, professional status, promotion opportunities. These characteristics determine how attractive a post is to incumbents and prospective recruits.

d) Social, economic, and political factors affecting the country or region, e.g., the annual real growth in per capita income, economic prospects, unemployment rates and trends, indications of political and social stability or instability. These and many more similar factors affect the labour market for staff of health and other sectors, and the attractiveness of training for health jobs. They also affect the allocation of funds for sectoral expansion and manpower development.

Factors affecting supply can be classified according to whether they are controllable or uncontrollable by decision-makers in the health sector.

These four groups of factors can be classified according to whether they are:

a) wholly or mainly outside the control of decision-makers in the health sector.* For example, economic factors are normally only marginally affected by health service decisions alone, as are most demographic factors such as average age at marriage and/or starting a family, or general educational levels. These are examples of uncontrollable factors.

b) wholly or mainly under the control of decision-makers in the health sector. For example, most characteristics of health service posts can be changed (within limits set by professional bodies or staff associations), and some personal characteristics of staff (proportion of women, of young staff, etc.) can be changed by selection procedures. These are controllable factors.

The likely impact of controllable and uncontrollable factors on future manpower availability must be assessed.

Factors listed under (a) above require forecasts to estimate the likely extent of their effects while factors under (b) require policy decisions taken within the health sector designed to achieve planned supply or staffing targets in the light of the forecast uncontrollable factors.

The effects of uncontrollable factors must be accepted because they cannot be changed, but it is important that they should be forecast as well as possible. It might be said that the task of health service managers is to adjust the factors they can control so as to nullify the negative effects or take advantage of positive effects of the uncontrollable factors, in trying to attain health planning targets. Manpower projections are useful aids in this task. It is important, therefore, to recognize which factors significantly affect recruitment and leaving rates.

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*In this book, for the sake of convenience, the "health sector" should be understood as including that portion of the education sector concerned with the training of health manpower, unless the contrary is indicated.

WHAT DATA IS NEEDED FOR A SUPPLY PROJECTION ?

At this point the planner will proceed to assemble his information on current supply and on likely increments and losses in coming years.*

To assess effects of manpower policies, recruitment and leaving rates need to be monitored.

It is important to measure recruitment and leaving rates in order to monitor the effect of policy decisions against plans, and as a basis of manpower projections. Recruitment rates are usually quoted as the number of individuals (or their full-time equivalents or FTE) taken into employment within a given time period (month, quarter or year). Recruitment targets are normally set in the same way.

Leaving rates are normally measured by:

a) census method: the number of staff leaving from a particular category within a given interval (usually a year) is given as a percentage of the average number of staff in the category during the period, i.e.,

Two methods exist for measuring leaving rates: census and cohort methods.

$$\text{annual leaving rate\%} = \frac{\text{number of leavers in a year}}{\text{average number in post during the year}} \times 100$$

---

*You should review the later part of Chapter 4 of Hall and Mejia on methods of data collection and presentation. Especially relevant are pages 92-102 (current supply), 102-107 (losses), and 107-114 (future increments). The procedures outlined there will be particularly useful when supply projections are to be made of broad categories of manpower, though they may have to be modified significantly when the emphasis is instead on personnel in a given institutional setting (e.g., hospitals), a given job classification (e.g., Grade II nurse auxiliary), or a relatively small geographical area such as a health district.

b) cohort method: the number of staff in a particular category remaining from a group who joined at about the same time is given as a percentage of the size of the original group. Thus after one year 70% of the original group may remain in service, after two years 50%, and so on.

The census method giving annual leaving rates is much more convenient for monitoring and is much easier to use in manpower projections. It becomes inadequate for use in projections if more than about 50% of staff leave within the time interval used (normally a year). The cohort method can be used for projections whatever the leaving rate, but monitoring information becomes detailed and complex and manpower projection calculations become extensive and unwieldy. It finds its most appropriate use where natural cohorts occur, i.e. in large batch entries to training courses.

The cohort method is more universally applicable but more unwieldy than the census method.

Estimation of probable losses may present special problems regarding both data availability and their interpretation. Among the two methods of estimating losses the census method is not very useful for most developing countries since most of the health staff is too young yet to experience much attrition from causes such as death and normal retirement. The cohort method is much more useful in this respect for projecting losses, especially where much of the loss is due to reasons other than death or normal retirement, but very often the data required may be too difficult to obtain.

The cohort method will probably have greater application in most countries, though lack of data may necessitate use of certain approximations.

HOW IS A BASELINE PROJECTION PREPARED ?

Once the planner has the requisite estimates, supply projections can be developed for the occupational category(ies) under consideration. As will be discussed later in greater detail, the first one will likely be a baseline projection, to be followed by selected alternative projections that explore the

Baseline and alternative supply projections can now be developed.

Start with a list of all significant sources of entrants to the manpower supply and reasons for losses.

effects of different policy options on supply. As a starting point, make a list of all the significant sources of entrants to the manpower supply and of reasons for losses. Possible entries to this list are given below:

Sources of Entrants	Reasons for Loss
Training institutions	Retirement/death/dismissal
Qualified staff returning from temporary retirement	Early (and perhaps temporary) retirement for personal reasons
Transfers from the private sector	Transfers to the private sector
Transfers from other employment sectors	Transfers to other employment sectors
Immigration	Emigration

Estimate the likely magnitude of manpower gains and losses, either with single values or maximum and minimum range values.

Next, estimate from whichever sources of information that seem relevant the likely number of entrants for each source and number or percentage of losses for each reason. In some cases, the available information may be sufficient to allow the planner to use single value estimates for the various gains and losses anticipated, as, for example, 100 new graduate nurses produced annually, or about five nurses lost from active service each year due to death or illness. In other cases, detailed and accurate information may not be available, in which case the planner should set down maximum and minimum estimates of the needed data inputs, thus establishing a range within which the likely true value will lie. By way of illustration, suppose that the likely number of nurses who will emigrate is very uncertain. In recent years, the annual emigration has fluctuated substantially, but, in general, the numbers leaving are substantial and show a slight tendency to decline. This source of loss might be considered at least partially controllable in response to health sector policies, but, since the planner is now working on a baseline projection, no consideration is given to the possible impact of such policies. Instead, the planner develops his maximum and minimum estimates of loss due to emigration (say, 5-9 nurses per year), and then selects for his initial calculations an intermediate value such as 7 nurses/year.

For a number of the categories on the list of potential sources of gain or loss either it may be impossible to develop maximum and minimum estimates or it hardly seems worthwhile to do so since the likely gain or loss is so small that it does not warrant separate attention. It makes little sense to list individually sources of loss that account for one or several nurses per year when other loss categories account for hundreds. For both the above situations -- where values cannot be readily estimated or they have little effect on supply -- the planner may choose to aggregate a number of gain sources or a number of loss groups together. This is, in effect, the basis of the cohort method of estimating supply flows, as has been described earlier in this session. The cohort method determines the aggregate loss flows experienced by cohorts of graduates or other entrants over time, and applies these rates to past and future cohorts of these staff.

When available data are insufficient to develop detailed gain and loss estimates, or when specific gain or loss sources account for trivial flows, planners should consider aggregating estimates.

Where there are adequate data for developing estimates for each likely source of gain or loss, this is the preferred choice. With the more detailed view of the dynamics of supply flows which this approach provides, the planner will find his task easier when policies have to be designed later which could modify supply. He can then look at each source of gain or loss individually, assess the potential impact of alternative policy options, and work through the implications of applying them. However, where such precision is not realistic, the planner should opt for an aggregate method such as that based on the empirical experience of past cohorts of graduates.

The disaggregated approach to specifying gains and losses is preferred when available data are adequate to the task; otherwise a more aggregate approach should be used.

As an example, suppose that planners wish to project the supply of nurses in public sector employment in a geographical region five years hence. The region under consideration is estimated to have a current (1980) supply of employed nurses

Example: supply of nurses in public sector employment.

of 500. The following estimates of the current annual flows of entrants and leavers are made:

Table 4.1. CURRENT GAINS - LOSSES

Entrants to public sector employment		Leavers from public sector employment	
New graduates from regional schools	80	Deaths and "normal" retirements	14
New graduates from other regions	11	Transfers to other regions and the private sector	24
Immigration	4		
Transfers from other regions and the private sector	18	"Early" retirement for family or other personal reasons	9
Nurses returning from "temporary" retirement	6	Emigration and other sources of loss	7
TOTALS	119		54

According to these estimates there is at present an annual net gain of about 65 nurses working in the public sector of the region. If this continued unchanged over a 5-year period, an extra 325 nurses would be available.

List agreed developments which could modify gain and loss flows, and estimate the anticipated magnitude and timing of their effects on supply.

However, situations are rarely static. Thus, the planner should next list all the agreed developments over the coming five years that could have a significant impact on the above estimates. In other words, what developments are already under way or agreed for implementation which could modify one or more of these gain and loss estimates? This list might look like the following, much abbreviated for simplicity:

- A new nursing school was opened one year ago with an entering enrollment of 20 and a planned final enrollment target of 30; by 1983 there should be an additional 15 graduates and once enrollments stabilize in 1986, the annual output should be 25, of whom about 21 are expected to remain in public sector employment.

- The economy of the subject region is improving considerably faster than that of the surrounding regions, a development that is likely to increase the number of nurses coming into the region as well as reduce the number of leavers.
- Recent changes in the requirements for licensing of nurses trained abroad make it very likely that no immigrant nurses will seek employment in the country.

Numerical estimates of the corresponding changes in recruitment and leaving arising from these developments must be made over the five-year period and then the gains are totalled together, and the losses totalled separately, to give the expected annual gains and losses. The previous "gain-loss" table (Table 4.1) is thus modified to that shown in Table 4.2. In this table, in order to simplify the example:

a) deaths and retirements are assumed constant over the five-year period; deaths are normally very few, and may be assumed constant, but retirements would be calculated more exactly from the numbers of staff now within five years of retirement;

b) the remaining leaving groups are assumed constant in number over the five-year period, whereas it is more probably the percentage of total staff in post which will remain constant. This number would be calculated during the projection itself.

Table 4.2. GAIN/LOSS PROJECTIONS

Source; Destination	Year of Projection				
	1980	1981	1982	1983	1984
GAINS					
Current graduates	80	80	80	80	80
Graduates from new school	--	--	15	17	19
From other regions	29	29	29	29	29
Effect of economy	--	4	7	10	13
Immigrants	4	4	4	4	4
Effect of licensing rules	--	-2	-4	-4	-4
Nurses returning	6	6	6	6	6
TOTAL	119	121	137	142	147
LOSSES					
Deaths and retirement	14	14	14	14	14
Other regions/ private sector	24	24	24	24	24
Effect of economy	--	-2	-4	-6	-8
Family/personal reasons	9	9	9	9	9
Emigration, other	7	7	7	7	7
TOTAL	54	52	50	48	46

These total gains and losses, which are expected to occur if no further changes are made to policies and programmes, are now used in a five-year projection.

Table 4.3. MANPOWER SUPPLY PROJECTION

	Year of Projection				
	1980	1981	1982	1983	1984
Supply at the start of the year	500	565	634	721	815
+ Gains	119	121	137	142	147
- Losses	54	52	50	48	46
Supply at the end of the year	565	634	721	815	916

As a matter of general practice in preparing baseline projections, the following important points should be stressed:

- Normally the planner should be as detailed and precise as the data available to him allows. When major gain and loss estimates can be disaggregated usefully, this should be done. But when the numbers are very small and/or a reasonable basis for estimation is lacking, he should combine his estimates, use a maximum and minimum range (for later calculation of potential error) and should note somewhere for later use the nature and potential size of his uncertainties. Above all, he should not make highly detailed projections, even if this is possible, when the decisions they are contributing to require only general or approximate figures.

No more precision should be attempted for the gain and loss estimates than is both feasible and desirable for the type of projections required.

- The planner should be sure to take into account the dynamic relationship between the private and public segments of the health sector. If the projection is concerned with all nurses in a region, he must take into account the likely supply of nurses in the private as well as the public sector. However, if he is concerned only with the

The dynamic relationship between the public and private sectors should be taken into consideration if relevant to the supply problem under study.

public sector nurses, it is easy to forget the relations between the two sub-sectors. In essence, if working conditions are increasingly unattractive in the public sector he may have reason to expect that growing numbers of public-sector nurses will move to the other sector. Where there is a substantial private sector, explicit attention should be given to its possible effects on public-sector employment.

Gain and loss estimates should be expressed in similar terms and units.

- Estimates of the current and projected supply and of likely gains and losses, should be in identical terms. For example, if the planner is estimating the supply of "employed" nurses, working the field of nursing, all estimates should be in these terms; and if he is concerned with the "potential" supply of nurses, including those who are employed and those who are qualified but not now employed, all estimates must take this supply definition into account.

Projection methods will differ depending on whether one is concerned with a very limited supply problem or one of much broader scope.

- There are important differences between the way projections should be made for a limited geographic area, an institution, a specific health programme, or other narrowly delimited subject, and the way they should be made for a large region, programme, or broad category of staff. In the former case it is normally necessary to go into a fair amount of detail about organization, jobs, etc., whereas in the latter normally fairly aggregated or gross figures are sufficient.

OF WHAT USE ARE ALTERNATIVE PROJECTIONS ?

Relatively few alternative projections should be prepared the first time around. These should reflect the more likely alternative supply options under consideration and should be sufficiently different from each other to justify their elaboration.

With the baseline projection complete, the planner can turn to the alternative projections. There is no magic number of such projections that should be prepared; the only guides at this point are that each should reflect one of the more important supply changes under consideration, and that there are sufficiently different assumptions in each projection to justify the effort of preparing them. The number of alternatives that can be imagined is virtually unlimited. Given the many different supply variables that could be modified, the different levels of intensity of implementation that could be postulated, and the different rates of implementation that could be scheduled, the task of developing a wide range of alternative projections can soon become unmanageable. Accordingly, the planner will want to select a few substantially different policy alternatives, each of which bears some tangible relation to the kinds of options and developments under consideration. Indeed, if there are major uncertainties about the most likely options, the planner may use his time more efficiently by deferring work on alternative projections until he has completed his initial estimates of demand. At that point it will be easier to identify precisely those alternative supply scenarios that are apt to be most relevant to the evolving or desired manpower situation.

Whatever the timing of work on the alternative projections, the methods used are exactly similar to those used for the baseline projection. Now, however, the planner will proceed to make an extended list of those supply variables considered to be most amenable to possible health sector control. For each potential source of manpower gain or loss the list will indicate (1) the major actions which could presumably be taken to modify the values estimated in the baseline projection, and (2) the degree to which such actions could be expected to have an effect. Later sessions will consider this process in greater detail, especially as it relates to the assessment of potential constraints and obstacles, but several typical entries as in Table 4.4 provide a notion of how this list might appear.

For the alternate projections, the planner lists the major supply variables subject to control and the magnitude of the changes that might be implemented.

For these and many other variables the planner will need to consult various sources of information to develop sound estimates of the impact each possible action, or set of actions, will have on gains and losses. In some cases empirical data will exist which can suggest the degree to which supply changes will occur, perhaps based on experiences in other parts of the country or reported in the literature. For most policy options, however, it will be a matter of consulting knowledgeable authorities such as administrators, educators, political authorities, professional representatives, and social scientists.

Diverse sources of information will need to be consulted to develop the list of controllable variables and of their potential impact on supply.

Table 4.4. EFFECT OF POLICY OPTIONS ON CONTROLLABLE VARIABLES

Source of gain or loss	Current best estimate, assuming no new developments	Postulated policy options (and their estimated effects)
Total nurse graduates per year in the region	100 per year rising to 125 per year five years after a new school starts producing graduates in 1982.	Expand existing nursing school by 20%. First output of 120 graduates in 1984, subject to the availability of sufficient qualified applicants.
Transfers to other regions and private section (24); leaving for family or personal reasons (9)	33 per year	Improve salaries by about 10%, provide creches for working mothers and opportunities for part-time employment, and end obligatory requirement that all hospital nurses rotate through the night shift. Estimated losses would reduce to 20 per year by 1983.
Emigration	7 per year	Improve working conditions locally as above and similar measures; institute a pay back requirement for emigrating nurses who wish to have their professional credentials validated for another country. Estimated emigration reduced to about 2 annually by 1983.

Variables should be aggregated in like groups when their individual magnitudes are thought to be small and/or when the data base is inadequate for making disaggregated estimates.

With the alternative projections, too, there will be many factors the effects of which are either too small by themselves or too unpredictable to warrant individual attention. The planner will then aggregate the potential impact of a set of related policy options as was done above in the case of measures designed to decrease the rate of "early" retirements from nursing practice. By so doing he identifies a possible set of actions, estimates their aggregate impact on retirements, and indicates that his information base is inadequate for the task of estimating their individual impacts. Decision-makers will thus have the opportunity to review the separate data inputs to the supply model and modify them if desired, while avoiding the pitfalls of undue precision. Furthermore, the planner will have set the stage for a later determination of the degree to which the policies ultimately adopted had the anticipated effects.

WHAT ARE SENSITIVITY ANALYSES ?

The above considerations lead naturally into the topic of "sensitivity analysis", a procedure which is useful for refining both supply and demand projections as well as for assessing their potential vulnerability to erroneous assumptions.

All projections suffer from inherent uncertainties with regard to the future.

It will be clear from the foregoing that all projections are affected by the uncertainties inherent in the future. Not only will there be doubts about future developments, but the planner will usually be confronted with incomplete and/or inaccurate estimates of certain aspects of the current manpower supply and of the current rates of gains and losses. Under these circumstances, how can the accuracy of the projections be improved?

The first step is to identify those estimates subject to the greatest degree of uncertainty, and hence of potential error.

It will be recalled that, early in the development of a supply projection, the planner must list all potential sources of entrants to the manpower supply and, similarly, all reasons for loss. He then proceeds to estimate the likely size of each gain and loss, expressing these estimates with single values where the data base was

The planner needs to review his supply model estimates and revise them as appropriate to reflect the amount of uncertainty he has about each one. The product of this review will be a set of optimistic and pessimistic estimates of factors affecting supply.

adequate and as a maximum/minimum range of estimates where data were lacking. For the initial baseline projection it was suggested that in these latter cases the planner should use an intermediate value between the limits of the maximum and minimum estimates. Now the planner should return to this list of gain and loss estimates, review it carefully, and for each entry ask himself the question: Although this estimate represents my best judgement of the likely effect of this factor on manpower gains or losses, by how much could I be wrong? Could the gain (or loss) be off by 10%, by 50%, by 100% or more? He should re-examine each gain or loss estimate in turn, taking first an optimistic but realistic view of the future (where any error in judgement works to the advantage of the health service), and then a pessimistic but realistic view of the future (where any error would work in the opposite direction). To be useful, both views must remain within the boundaries of realism; they should assume that things will go well or badly, as the case may be, but not unreasonably so. By then inserting the new values for each source of gain or of loss, the planner can make successive recalculations of the projected supply to identify those supply factors which have the greatest effect on the accuracy of his results. Usually only a few recalculations of supply will be necessary; once the optimistic and pessimistic value of each input estimate has been established, the planner can generally pick out, by simple inspection, those with the greatest potential for changing the answer. He may even choose to make one projection using all the optimistic values and one using all the pessimistic ones, thereby setting the outer limits of the potential supply. Since it is highly unlikely that all the optimistic, or all the pessimistic, estimates will come to pass, these outer limit estimates will probably be well outside the range of the true value for supply.

By knowing which are the most sensitive factors affecting supply, the planner can proceed to collect additional information as a basis for improving his estimates.

The purpose of the above exercise is to identify the sources of greatest potential error. The results of each calculation will show the degree to which the final projection is sensitive to erroneous estimates of the input value; hence the process whereby this is determined is called sensitivity analysis. With the results of this analysis in hand one can now consider whether anything can reasonably be done to improve the estimates of those factors most subject to error. In our earlier example regarding the projection of the supply of nurses, if the number of applicants to nursing schools was found to be a sensitive factor, the planner might wish to obtain additional information on this topic to supplement that collected initially.

In practice, sensitivity analysis tends to identify two types of factors with substantial effects on the reliability of projections:

a) Factors that affect the largest flows of joiners and leavers. For example, suppose very few experienced nurses are recruited as compared with the number of new graduates entering direct from training programmes. Large percentage errors in estimating the number of experienced recruits will have a small effect on the projected supply, whereas only a small percentage error in the supply estimate of graduates may be equivalent to the nurse staffing in an entire hospital.

b) Factors which have an opposite effect on the number of joiners and leavers. For example, an increase in nurse salaries might increase the flow of recruits into the health service while at the same time reducing the number of nurses who seek employment elsewhere. This factor has a double effect on the number of nurses employed, and so errors of estimation will have a double effect on the final results.

Sensitivity analysis will identify two types of factors with the greatest potential for distorting projections: those that affect the largest flows of joiners or leavers and those that have double impact, on both joiners and leavers.

Sensitivity analysis can be used to assess both controllable and uncontrollable factors. In either case the planner will be unsure of the precise degree of error, and, in the case of controllable factors, there are additional uncertainties regarding the way the proposed policy or action would be implemented, e.g. fast or slow, aggressively or timidly, with strong administrative and logistic support or without, on a broad or a narrow basis.

Sensitivity analysis is appropriate for the assessment of both controllable and uncontrollable factors. It can be used to equal advantage in baseline projections and alternative projections, as well as in projections of manpower requirements.

4.20 Here the sensitivity analysis can help assess the consequences of deficient implementation as well as unrealistic assumptions about the impact of each proposed policy on supply. In this way, sensitivity analysis offers the planner a powerful tool for identifying those policies or other actions most likely to have a significant impact on supply. With this knowledge the planner will be able to suggest what components of the plan should be given priority attention, to refine the scheduling and sequencing of actions so as to ensure the greatest effect, and to identify those aspects of the plan that will need the closest monitoring so that the validity of critical plan estimates can be empirically tested at the earliest opportunity.

With the results of sensitivity analysis, planners can help identify priority actions, assist with scheduling interrelated actions, and improve the utility of monitoring data on plan implementation.

BACKGROUND READING

Hall, T. L. and Mejia, A., ed. Health manpower planning: principles, methods, issues. Geneva, World Health Organization, 1978 (Chapter 4).

OTHER REFERENCES

1. Aspen Systems Corp., ed. Methodological approaches for determining health manpower supply and requirements. Vol. 1: Analytical perspectives (DHEW Publication No. (HRA) 76-14511); Vol. 2: Practical planning manual (DHEW Publication No. (HRA) 76-14512), Washington, D.C., U.S.A., Department of Health, Education & Welfare, 1976.

2. Lave, J.R., et al. Medical manpower models: need, demand and supply. Inquiry, 12(2):97-125 (1975).

3. Simeonov, L.A. Better health for Sri Lanka: report on a health manpower study. New Delhi, World Health Organization Regional Office for South-East Asia, 1975 (Document SEA/PHA/149, p. 315).

4. United States Department of Health, Education & Welfare, Public Health Service, Health Resources Administration, Bureau of Health Resources Development. The supply of health manpower: 1970 profiles and projections to 1990. Washington, D.C., U.S.A., 1974 (DHEW Publication No. (HRS) 75-38).

EXERCISES

EXERCISE 1. Preparation of a Baseline Projection

1. Select three categories of staff likely to be important in health manpower planning in your country. If possible, select one category under each of the following headings:

   a) a professional group employed wholly or mainly in the health sector, e.g. doctors, nurses;

   b) a non-medical professional group employed within the health sector, e.g. statisticians, sanitary engineers;

   c) a non-professional group, e.g. cleaners, clerical staff, drivers.

   Select one of these categories for further consideration.

2. a) List in approximate descending order of importance the main sources of gains and destinations of losses for your assigned group of staff, based on your own knowledge of the situation (p. 4.2).

   b) For your assigned group of staff, list the main factors that affect the rate of gain from each of these sources and the rate of loss to each of these destinations (p. 4.4).

   c) In your estimation, which of the factors in (b) are controllable and which uncontrollable by health service administrators and educators (p. 4.5)?

3. Produce a gain and loss projection (table 4.2) based on the results of 2(a) and (b) above. Starting from the current staffing level, use these rates to complete a baseline (reference) projection as in Table 4.3 (p. 4.13), using your best estimates where necessary. How do the staff-in-post figures vary over the projection period?

4. Where you are uncertain of some gain or loss rates, try other possible values in the projection and see how much difference this makes to the answers. (This is a sensitivity analysis, p. 4.19.) What items of information should be made more accurate if possible?

5. If you have time, do one or two other projections using optimistic or pessimistic values of gain and loss rates.

EXERCISE 2. Preparation of Alternate Projections

In this exercise, you are expected to have produced a simple baseline projection for the category of staff you selected in Exercise 1.

1. What sources of information are available in your country relating to the controllable factors and how reliable are they? How confident are you that this information can be used to predict the likely effects of policy changes designed to modify supply? Are existing data deficiencies likely to be a serious source of uncertainty in the supply projections?

2. What types of policy options are available to move the controllable factors in preferred directions? What kinds of statistics should be monitored to track the success of implementing these policies?

3. Review the list of uncontrollable factors affecting recruitment and leaving rates which you produced in the previous session. You may find it convenient to,rearrange the list to show, for each of the uncontrollable factors:

   a) what sources of recruitment it will affect;

   b) what destinations of leavers it will affect.

4. In the light of this list, do you think the effect of these uncontrollable factors alone would cause the recruitment rate for this staff category to increase or decrease by a great deal/moderately/not at all, over the next five years?

   Do you think they would cause the leaving rate for this category to increase or decrease a great deal/moderately/not at all over the next five years?

   What do you judge to be the net effect of these changes in recruitment and leaving: would it increase or decrease the numbers in the selected category a great deal/moderately/not at all?

5. Are there any health policies or plans (controllable factors) already scheduled for implementation which will affect the numbers of staff in the selected category within the next years?

   If so, what is the new estimate of the change in numbers in the selected category over the five-year period?

(Although for the purposes of this exercise, the estimates are necessarily qualitative, in an actual health manpower planning exercise, numerical results would be produced and the results would be more specific.)

EXERCISE 3. Undertaking a Sensitivity Analysis

Since a baseline projection attempts to take account of the uncontrollable factors over the period of the health plan (which usually covers five to ten years), it is inevitably subject to some uncertainty. It is important for the manpower planner to be aware of how large this uncertainty is and where it principally arises, i.e. where the results of his calculations are especially sensitive to the judgements or assumptions he has made. The purpose of this exercise is to carry out such a sensitivity analysis.

With this information, the manpower planner can also consider what could be done to try to reduce this uncertainty, and so judge whether the attempt to reduce it would be worthwhile.

1. In your judgement, which two of the list of uncontrollable factors are likely to give rise to the largest error in the conclusion you produced in Exercise 2? In making your decision you may wish to consider:

    a) which factors have the largest effects on the main sources of recruitment and leaving;

    b) which factors have opposite effects on recruitment and leaving, so that a change will increase one and reduce the other.

2. In the light of your level of uncertainty about the chosen factor, what are the most optimistic and pessimistic levels of these factors you envisage?

    How big an error (excess or deficiency) might these cause in your conclusion in Exercise 1?

3. What steps might you take to reduce your uncertainty about the chosen factor?

    How effective are they likely to be?

    Would the effort be worthwhile?

EVALUATION QUESTIONNAIRE FOR SESSION 4

Date________________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negatove responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

	Not at all	Poorly	Fair	Well	Very well
1. Specify the 3 main components of a manpower supply projection.	☐	☐	☐	☐	☐
2. List the primary sources of information used for each component.	☐	☐	☐	☐	☐
3. Identify the main factors affecting gain and loss rates for the principal manpower categories.	☐	☐	☐	☐	☐
4. Specify which factors are controllable and which are not.	☐	☐	☐	☐	☐
5. Describe 2 methods of estimating manpower losses.	☐	☐	☐	☐	☐
6. Prepare supply projections for a given type of manpower.	☐	☐	☐	☐	☐
7. Conduct a sensitivity analysis of a manpower projection.	☐	☐	☐	☐	☐

	Not at all	A little	A fair amount	Most of it	All of it
2. Did you read any of the learning material before the session?	☐	☐	☐	☐	☐

3. Was the learning material:	Not at all	Somewhat	Fair	Moderately	Very
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

4. Did you find the illustrations:

	Not at all	Somewhat	Fair	Moderately	Very
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐

5. Did you find the exercises:

a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated

	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:

	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

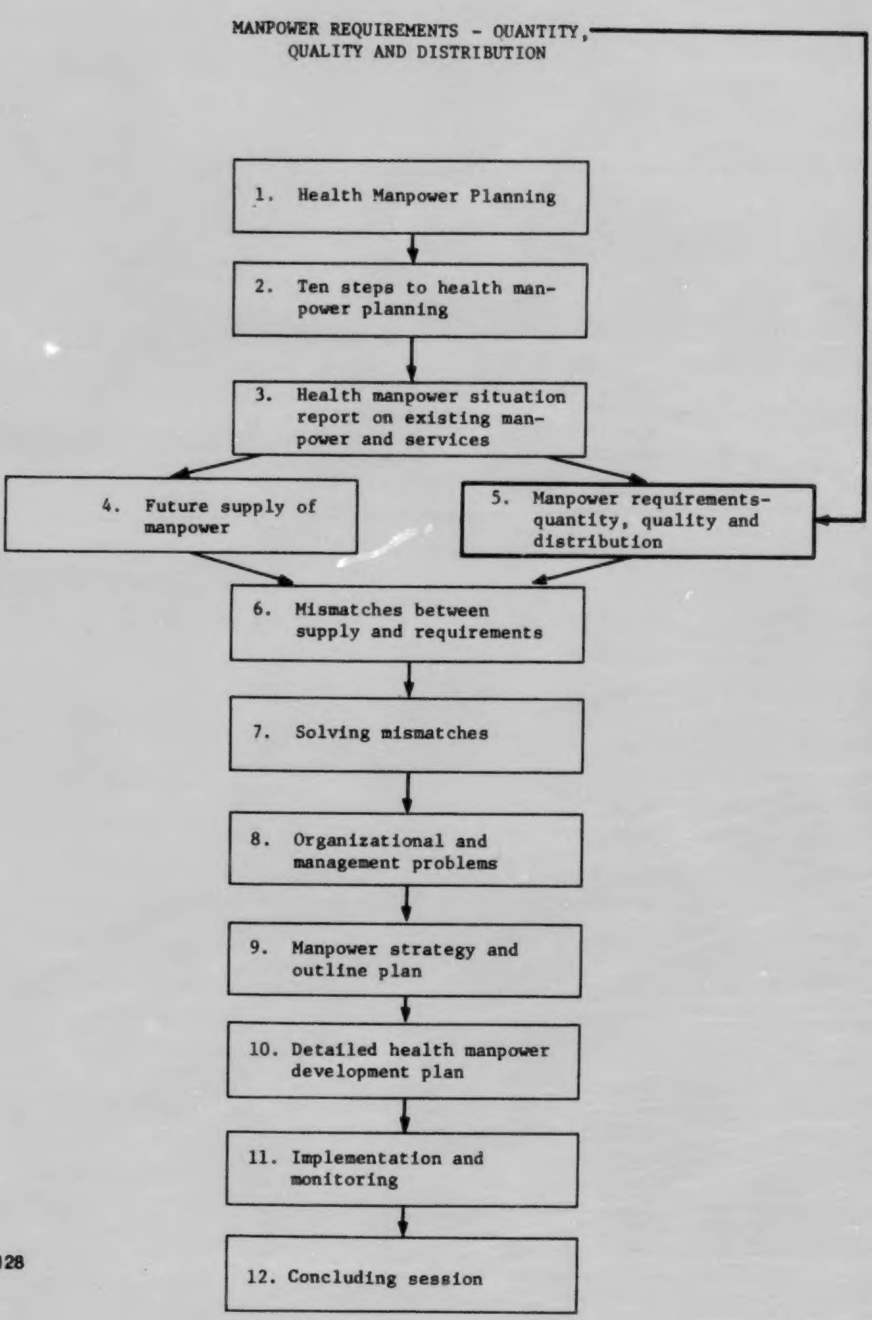
8. Do you have any other comments?

Name ______________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION 5

MANPOWER REQUIREMENTS QUANTITY, QUALITY AND DISTRIBUTION


MANPOWER REQUIREMENTS - QUANTITY, QUALITY AND DISTRIBUTION
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session

ESTIMATING REQUIREMENTS

SUMMARY

Future health manpower required is the number of people needed to staff present and proposed health programmes. Four main methods of estimating manpower requirements are described. Each one has advantages and disadvantages which make it more or less appropriate than the other methods to any given planning circumstance. The method or combination of methods selected will depend on such factors as: type of manpower being planned for; government's orientation toward and responsibility for health services; planning capabilities; data availability; degree of control exercised by a government over the health sector; size and role of the private sector; and level of development of a country.

The four methods of estimating manpower requirements each have different information needs, reflecting different rationales for their use. The simplest method, in terms of information needed, and of calculation, is the Manpower/Population Ratio method. In common with the other methods, it needs basic demographic and manpower supply data.

For the Health Needs and Service Targets methods, information on staff is a critical requirement which must be determined either by direct measurement or by obtaining the opinions of knowledgeable staff.

The Health Demands method requires basic information on the use of health services as a function of demographic, economic, geographical and other variables. Some variants of this method can be very complex while others are well within the capabilities of developing countries.

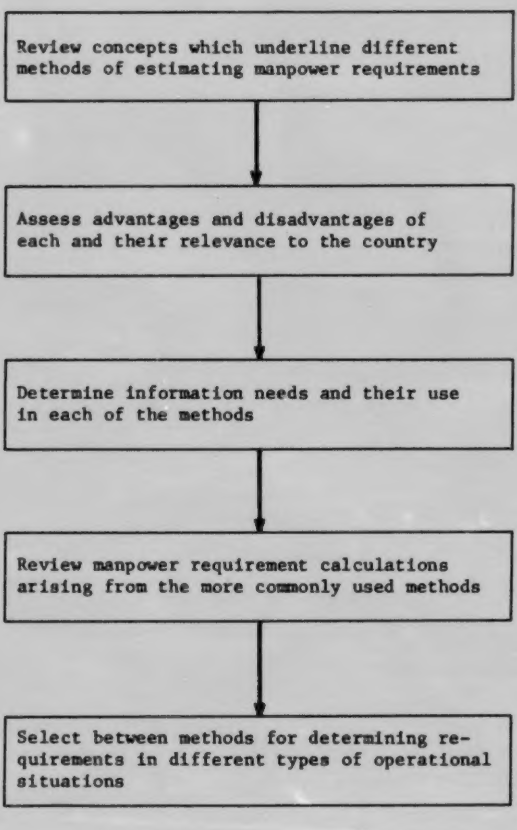
The precision attainable and needed for a given projection of health manpower requirements will depend on various considerations, including data availability, planning capability, and the degree of public sector control over plan implementation. These judgements should be made by planners in consultation with health administrators.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Describe the four basic methods to estimate manpower requirements.
2. Select and use the method or methods that best fit specific planning needs and circumstances.
3. Specify the main kinds of information needed to determine manpower requirements using each of the four methods.
4. Evaluate current estimates of manpower requirements in their own country, and assess their validity.

SESSION STRUCTURE



Review concepts which underline different methods of estimating manpower requirements

Assess advantages and disadvantages of each and their relevance to the country

Determine information needs and their use in each of the methods

Review manpower requirement calculations arising from the more commonly used methods

Select between methods for determining requirements in different types of operational situations

LEARNING MATERIAL

WHAT DOES HEALTH MANPOWER DEMAND MEAN ?

The previous session discussed the measurement and projection of the health manpower supply; this session examines the other side of the coin - health manpower requirements. Requirements or demand are concepts that may be confusing, especially in planning, where people with different backgrounds and interests are trying to define the future. A proposed terminology useful for health manpower planning is given here for your reference.

The terms, manpower "demand" and manpower "requirements," are technically different but are often used interchangeably.

> Demand, in a restrictive technical sense, refers to the total amount of various types of health services that a given population seeks and has the means to purchase at the prices that prevail at a given time. From this demand for health services can be derived the demand for health manpower, i.e. the numbers and kinds of health personnel needed to staff the demanded health services. The statement, ".... means to purchase at the prices that prevail at a given time," refers to any organization, group or individual, that may "buy" health services; they include especially governments, insurance companies or programmes, and private individuals.
>
> Need or requirement represents an estimate based on professional judgement of the number of health workers or amount of services necessary to attain and maintain a particular level of health care.

"Demand" is the term most often used in general manpower planning. However, since this may cause confusion in health manpower planning -- which uses the word for a specific methodological approach to planning -- the more neutral word "requirements" is used in most of this manual.

To avoid confusion, the term "requirements" is used for the most part in the text.

HOW ARE MANPOWER REQUIREMENTS DETERMINED ?

There are many different approaches to the estimation of manpower requirements and each has it advantages and limitations. Virtually all methods in use can be classified under one of four main methods of estimation.

Many different methods have been used to estimate manpower requirements, indicating that no one method is superior to all others. By taking certain liberties one can classify virtually all of these methods under four substantially different approaches to the estimation of requirements, each of which is based on its own set of assumptions, its own data base, and its own view of the role and responsibilities of health planning, and produces its own unique results. Accordingly, a critical choice that planners must make early in their efforts to assess manpower requirements is the method to use. Figure 5.1 briefly defines the four methods,* and shows how each converts health plans into health manpower requirements.

Health Needs Method is based on biological needs of the community.

The Health Needs method uses the biological needs of the community to estimate manpower requirements. The community's health care needs are identified and quantified using judgements on desirable standards (norms) of good health care. The planner tries to answer the question as to how much and what types of manpower are needed to provide optimal health care to the community. Sometimes, the "optimal" health care is replaced by "minimal" health care when the resources of the country are relatively scarce. The norms, in this approach, are usually established by health professionals.

Service Targets Method is based on targets of service provision.

In the Service Targets method, targets for the provision of health services are set, usually by health authorities, and based on a number of factors including health needs, economic demands, the delivery system and the various types of

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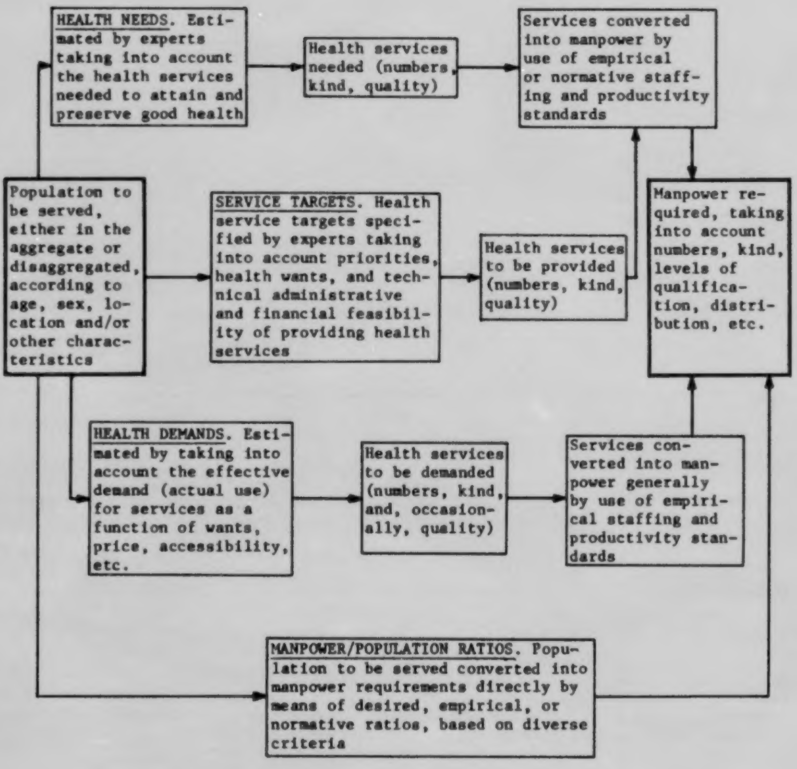
*Hall, T.L. and Mejia, A., ed. Health manpower planning: principles, methods, issues. Geneva, World Health Organization, 1978.
- Definitions of the four methods and their characteristics, pp. 63-74
- Selecting a method, pp. 79-80
- Summary of the advantages, disadvantages and limitations of each method, pp. 82-83.

Figure 5.1. SCHEMATIC REPRESENTATION OF FOUR METHODS OF ESTIMATING MANPOWER REQUIREMENTS


HEALTH NEEDS. Estimated by experts taking into account the health services needed to attain and preserve good health
Health services needed (numbers, kind, quality)
Services converted into manpower by use of empirical or normative staffing and productivity standards
Population to be served, either in the aggregate or disaggregated, according to age, sex, location and/or other characteristics
SERVICE TARGETS. Health service targets specified by experts taking into account priorities, health wants, and technical administrative and financial feasibility of providing health services
Health services to be provided (numbers, kind, quality)
Manpower required, taking into account numbers, kind, levels of qualification, distribution, etc.
HEALTH DEMANDS. Estimated by taking into account the effective demand (actual use) for services as a function of wants, price, accessibility, etc.
Health services to be demanded (numbers, kind, and, occasionally, quality)
Services converted into manpower generally by use of empirical staffing and productivity standards
MANPOWER/POPULATION RATIOS. Population to be served converted into manpower requirements directly by means of desired, empirical, or normative ratios, based on diverse criteria

services - preventive, ambulatory, emergency, and in-patient care. As in the health needs approach, this method uses norms or standards of the services required by the community and the services produced by health personnel. The Health Needs method may be considered as a particular case of the Service Targets method, in which the norms for services required are set by professional judgement.

Health, or Economic, Demand method is based on projected community demand for health care.

The Health or Economic Demand method estimates staff requirements from expected changes in structure, income and health attitudes of the population. This method asks how much and what kinds of health services people actually use and the costs of obtaining these services. Current utilization rates of services by different age, sex and income groups provide a measure of the met or effective demand. These rates are then projected on future changes in the structure of the population. The planner can also take into account the unmet demand for services.

Manpower/Population Ratio method is based on the size of the population alone.

The Manpower/Population Ratio method is the simplest method to apply and the manpower requirements are estimated by the size of the population alone. The desirable ratios are established on the basis of:

- current situations,
- international comparisons,
- recommended standards,
- ratios observed in a favoured area of the country, and
- extrapolation of past trends.

The ratios are then applied to future estimates of population size to derive future manpower requirements.

WHICH METHOD SHOULD BE USED ?

The above descriptions of the four methods focus intentionally on their differences and minimize their broad areas of overlap. Rather than view them as separate methods it is better to see them as a series of overlapping methods on a continuum that starts with meeting professionally determined needs for health care and ends with meeting demands and wants. Accordingly, while the planner may choose to base his estimates of requirements primarily on one method, say that of health needs, he will almost inevitably be using elements of the other three methods. The following statements explain this.

The four methods have broad areas of overlap and should be viewed as extending along a continuum rather than as mutually exclusive entities. Whatever method is selected, planners will likely have reason to use elements of other methods to complete their analyses.

- When using the "needs" method, planners take into account available resources, preferences of the public for services, the extent to which the public uses the services well, and the degree to which the health sector can be made to provide the "needed" services. Once manpower needs have been calculated, they can be expressed as a manpower/population ratio, based on the need for services.

- When using the "service targets" method, planners take into account the need for health care, the relative effectiveness of different types of services, and the likely use people will make of the services (or demand). Here, too, the resulting manpower needs can be converted into a manpower/population ratio, based on the service targets method.

- When using the "demands" method, planners consider the relative need (as determined by health professionals) of the different types of demanded services in order to assign priorities to them for allocating funds. The demand for manpower can then be converted into a manpower/population ratio, based on demand for services.

- Lastly, the manpower/population ratio method itself even if not based on, and hence a derivative of, one of the other three methods, almost always takes into account some notion of the major needs and demands for services, and of the ability to pay for and provide them.

The choice of the planner, therefore, is not a mechanical one of matching a planning problem with

The selection of a method to estimate manpower requirements will be based in large part on judgement.

a planning method; it is, instead, a matter of judging which method or combination of methods can most usefully result in a description and projection of requirements. Often the planner uses more than one method to analyze the same problem, or different parts of a problem.

Projected requirements of full-time equivalent personnel will have to be corrected to take into account time taken up in non-service activities.

The first three methods discussed will result in estimates of the full-time equivalent (FTE)staff needed for specified functions or services. To determine the actual number of staff needed an allowance has to be made for the time spent by staff on other activities not directly concerned with health care services. They include administration and reporting, supervision, travel, continuing education, sickness, absenteeism, and leave. Once estimates have been made of the ratio of time spent on these latter activities to time spent on health care services, the planner can increase the estimated FTE requirements by an appropriate factor to derive an estimate of the total staff needed.

Support staff requirement can be estimated either using one of the methods described earlier or, as is often done, by establishing a ratio between staff concerned with the direct provision of services and those responsible for providing supporting services.

For the most part the four methods described above are used to determine the need of direct health-care staff. They are not often used to determine the need of support services staff, including administrative staff. This is usually calculated separately by means of ratios of support staff to direct-service staff, which may be determined either empirically by task analysis or activity analysis, e.g.,

- one secretary/clerk to every three doctors providing ambulatory care;
- one cleaner/sweeper to one health centre.

Ratios such as these enable estimates of direct-service staff requirements to be converted into the numbers of additional support staff needed. However, it is important that the underlying rationale and dynamics of this service staff to support staff ratio are understood to ensure that any subsequent changes in the organization or orientation of the health care programme can lead to corresponding changes in the support-staff ratios used.

Select method on basis of planning capabilities and feasibility, and of appropriateness to the actual planning situation.

Many factors will influence the selection of one or more of these methods or of their many variants. Sometimes one or more of them cannot be used because not enough information is available. At other times, the staffing situation or the staff functions being considered may themselves suggest that one method is more suitable than another. Furthermore, the health manpower planner must work within the constraints of trying to provide as accurate an estimate of future manpower requirements as is feasible and justifiable: feasible in the sense that the manpower planner must produce plans within the limitations of available planning time and resources, and justifiable in that the precision of the calculations must correspond with data resources, the degree of future uncertainties, and the ability to use the estimates to bring about change. The interplay of all these factors will guide the choice of planning method(s), as will a review of the accuracy and utility of methods used in the past to make manpower requirement estimates.

HOW ARE THE METHODS APPLIED ?

Information needs for Manpower/Population Ratio method are the least of all the methods.

The Manpower/Population Ratio method usually requires the least information of any. In its simplest form, the total staff requirements are determined by applying the desired staff-to-population ratio to the population base to be served. For example, if the desired ratio is 4 physicians to 100 000 population, the population base, say 5 million, is then used to determine the number of physicians needed, in this case 200.

Three main data requirements: current manpower supply, normative ratio to use, and projected population.

The ratio method needs three basic sets of data: the existing supply of manpower of the type under consideration, the normative ratio to be used, and the projected population. These data are usually needed also by the other methods and so the following discussion applies also to them.

An estimate of the current manpower supply is necessary for the reasons noted in Session 4, and hence no further discussion is needed here, except to point out the obvious condition that if the current supply is unknown, the planner cannot determine what changes, if any, would be necessary to satisfy his projected estimate of requirements.

Deciding on distribution of staff within a country can be difficult.

For most countries, population estimates and projections will be routinely provided by a government agency, and these official estimates should be used wherever possible. In some places planners may not be able to obtain official estimates for certain years or regions of interest, and in such cases, they will have to make their own estimates -- estimates which will be complicated by the variable rate of population growth around the country. This variation by itself poses little difficulty to a national census bureau in projecting regional population trends. The difficulty arises when significant migrations take place between regions or to and from other countries. Migration data are always difficult to obtain, and planners will have to make the best judgements they can on the basis of the data available.

A statement of staff requirements using the ratio method can be conveniently prepared in the following tabular form:

Table 5.1. POPULATION CHANGE

EXAMPLE:

Population (1976 census)		1980	Target years in the plan period				
			1981	1982	1983	1984	1985
Population estimate in census year	10.00 million						
Population estimate for current year		11.04 million					
Population estimate for each year of plan period			11.26 million	11.48	11.71	11.95	12.18

Population growth rate used (as specified by census bureau) = 2%/year

Table 5.2. MANPOWER REQUIREMENT

EXAMPLE:

Staff type: Physicians	1980	Target years in the plan period				
		1981	1982	1983	1984	1985
Current supply of active physicians	110					
Current physician/ population ratio	1:100 000					
Target physician/population ratio* (1:---)	-	96 000	92 000	88 000	84 000	80 000
Physicians needed	-	117	125	133	142	152
Annual increment needed over previous year	-	7	8	8	9	10

* The target 1985 ratio is 1:80 000. It is assumed that the ratio will improve in five approximately equal increments between 1980 and 1985, since otherwise a massive increase would be necessary by 1981, with only small increases afterwards. Alternatively, smaller increments might be assumed in the earlier years and larger ones later when the activities designed to increase physician supply have had time to have their full effect.

To translate these national manpower requirements into regional distributions of staff virtually the same tabular form would be used but the populations considered would be those of the regional administrative units (district, province, state). Ratios might also be varied to take into account different regional characteristics, e.g., urban/rural, affluent/poor.

Health Needs Method uses information on morbidity and mortality and desired norms of care.

The Health Needs method relies much more on information that the health ministry would be expected to collect than does the ratio method. The first stage in this method is concerned with summarizing current information on the causes of morbidity and mortality, and on desired norms of care (numbers, kinds, sequences, etc., of services) for the health conditions of particular interest.

Bases for the development of service norms are current technology and understanding of effects of previous health interventions.

The bases used for developing service norms should be current medical technology, the potential for the local application of this technology, and past experience with the reduction of specific disease problems as a result of planned interventions. The point of departure is the services that people need for the priority health problems; once these needs have been defined the planner can proceed to work within the constraints of the medical technology of his own country.

Health need statements may be presented in various ways, as is shown below:

- The infant mortality rate is now 80/1000; preventive and curative services possible in the country could reduce this rate to about 35/1000; to do so would require about six clinic and home visits for each infant in the first year of life, each visit to have a specified content of actions; parallel actions would need to be taken to improve the physical environment for children.

- The annual malaria parasitic index is now 1.5 and given current technology, the climate, and contiguous malarious areas in neighbouring countries, this index could be reduced to about 1.0 within five years; to do so would require .... (specified actions which would have to be taken).

The quality of information available for the health needs method may be extremely variable. This problem, together with uncertainties about the scale of interventions needed to reduce morbidity, poses difficulties in determining precisely the types and numbers of future services required. However, from the planner's point of view, epidemiological information of this type can be an extremely useful base for more refined estimates in the future.

The quality of information may vary greatly, but, with time, can be improved so as to facilitate not only the estimation of requirements, but also other aspects of health programming.

In developing norms for services four different types of interventions can be identified:

- health promotion (education, safe water, etc.);
- primary prevention (surveillance and the early detection, diagnosis, and treatment of incipient disease);
- treatment (of established disease, and prevention of further progression of the disease or disability);
- rehabilitation (reversal of disability and restoration of patients to the best health possible).

Manpower requirements are derived by translating desired interventions into activities or services and then into specific types of staff on the basis of productivity standards, i.e. estimates of the numbers of specified services that a health worker can provide in a given amount of time.

A formula for calculating manpower requirements for the health needs method.

In mathematical terms, the number of staff of a given kind can be determined from the formula:

$$M = \frac{P \times I \times N \times T}{S}$$

where M = the manpower requirement in a given year;

P = the projected population at risk or the projected population to receive a specific service;

I = the average number of expected incidents of ill-health per person per year;

N = the average number of a given kind of service to be provided per incident per year per population unit;

T = the average time a service takes; and

S = the total amount of time a practitioner works a year for direct health services.

Using the formula to determine malaria field workers needed to give treatment to malaria fever cases.

By way of illustrating the use of this formula, consider the treatment aspect of the work of a local malaria field unit. The relevant norms are:

- population at risk (P) = 5 million;
- malaria incidence (I) = two cases per 1000 per year;
- the average treatment requires five visits by the malaria worker;
- the average daily staff time needed for each visit is 1.5 hours, allowing for travel time to and from the patient's home;
- the net annual working time available for treatment is 1500 hours, after deducting staff leave allowance.

The manpower requirement is, therefore:

$$M = \frac{5\ 000\ 000 \times \frac{2}{1000} \times 5 \times 1\text{-}1/2}{1500}$$

= 50 full-time malaria workers.

While individual manpower requirements can be simply determined in this way, as an approach it is much more convenient to determine them around some organizational grouping which has a functional identity. Examples include:

- headquarters units,
- regional offices,
- district hospitals, and
- health centres.

In practical terms, organize manpower requirements around functional groups according to programme and activity.

Furthermore, in building up the case for manpower requirements, it is convenient to use a tabular format which links the activities to their programmes. Such a format allows for a simple assessment of staff participation in any programme and with any type of activity. It also makes it easier to visualize implications for staffing of changes in programmes or levels of activity. Table 5.3 is an example of the kind of format that might be used along with illustrative values.

A tabular format is useful for linking service activities to health care programmes.

Two elements of the information needed to complete the table (viz. time required per service activity and staff availability for service activities) need special attention. It is not uncommon for gross errors to be made in estimates of both these factors leading to correspondingly gross errors (generally under-estimates) of the manpower needed. To provide a measure of either of these two factors, two options are open:

Staff utilization and availability are critical measures in determining manpower requirements.

- make intelligent guesses of the time needed on the basis of the informed opinions of experienced staff in the services; or
- undertake actual measurements.

Utilization and availability can be assessed through informed opinion or measurement.

Table 5.3. PROGRAMME/ACTIVITY MANPOWER CHART*

Unit: Health Centre Staff type: Midwife Available service time per year (s): 408 hours Total population: 13 000		Programmes					
		Obstetrics			Communicable disease	Community health education	Total
		Pre and Postnatal	Deliveries & abortions	Family Planning			
Activities	Population at risk:	1200	1200	2600			
	Population to be covered (P)	600	360	1600	360		
Midwives Visits (clinic) Vacc./immunization of pregnant women and insertion of IUDs	No. of incidents –(I)	1		2			
	No. of service activities per incident –(N)	2		1			
	Time required per service activity in hrs. (T)	1/6		1/6			
	Total time required in hrs. (R)	200		537			737
Attendance at deliveries and abortions by midwives	(I)		1				
	(N)		1				
	(T)		2				
	(R)		720				720
Home visits by midwives	(I)	0.4					
	(N)	1					
	(T)	2					
	(R)	480					480
Immunizations BCG vaccination	(I)				1		
	(N)				1		
	(T)				1/10		
	(R)				36		36
Population Health education activities	(I)						
	(N)						
	(T)						
	(R)						
TOTAL							1973

(Initials in brackets refer to manpower formula.)

$$(\text{Staff Requirement})\ M = \frac{P \times I \times N \times T}{S} = \frac{R}{S}$$

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*Montoya-Aguilar, C. A manual of health programme technology. New Delhi, WHO SEARO, October 1975.

Such measurements are discussed in Session 7 with regard to the use of nurses and midwives. However, whichever of the methods of making measurements are used, some time, money and organization will be necessary. For this reason, it is desirable for the manpower planner to assess what accuracy is required in the light of the quality of the other information available to him. The quality of measurement and the time it takes will vary according to the accuracy sought.

Major elements of the Service Targets method are similar to those used for the health needs method. The differences are in the way targets are developed. Refer to the example given earlier of an objective of reducing the infant mortality rate from 80 to about 35 per 1000. According to the health needs method the initial objective is set at the maximum feasible amount of reduction, and standards of service (and hence of manpower) are set accordingly. Some compromises will eventually have to be made with an objective which, although theoretically feasible, is not attainable in practice, but nevertheless this objective is the point of departure. By contrast, the service targets method will use other criteria, besides that of biological need for care, for establishing targets for the provision of services and, consequently, of manpower. These other criteria will be concerned with such factors as the public demand for services, political views, costs, efficiency of service delivery, likely effects, segment of the population benefitted, access, and administrative feasibility.

Service Targets Method is very similar to the Health Needs Method differing only in the way the targets are developed.

The information needed by the service targets method is:

- population estimates and projections; and
- current and projected estimates of productivity, the likely demand for services, administrative capabilities and constraints, political priorities, costs, and, somewhat less than the health needs method, information

Data needs for Service Targets Method very similar to Health Needs Method, but with less emphasis on morbidity and mortality patterns.

on morbidity and mortality patterns, and on the relations between these patterns and the provision of health services.

Health Demands Method determines manpower requirements arising from changes in population characteristics.

For the fourth method, based on Health Demands, manpower requirements are derived from estimates of the likely future demand for services based on projected changes in the characteristics of the population. There are various ways of doing this, but only one is discussed here. The demand for services is based on a current pattern of service use by definable population groups. The future demand for medical care is derived, therefore, from the expected change in the size of these population groups and the proportionate change in services that this might imply in the future.

Three types of data are needed: demographic, productivity and service utilization.

Three types of information are needed for this approach to determine manpower requirement:

- information on the current demographic and economic characteristics of the population, such as sex, age, income level, residence (urban/rural, etc.) as well as the projected changes in these characteristics for the planning period;
- estimates of the current and projected productivity of manpower in different types of work situations;
- information on the current use of services available according to diverse population characteristics.

Table 5.4 provides a simplified example of the projection of doctor visits based on the health demands approach. In some models far more detailed estimates can be developed of the number of visits made by persons defined according to age, sex, residence, income, educational level, eligibility for health care benefits, and other criteria.

Table 5.4. EXAMPLE OF DEMAND PROJECTION BASED ON CONSTANT UTILIZATION RATES BY A CHANGING POPULATION (HYPOTHETICAL DATA)*

Population income[a] category	Population in income category (millions)	Per capita utilization of doctor visits (average values)	Number of doctor visits (millions)
	Base year (observed values)		
Low income	10	1.0	10
High income	4	2.0	8
Total	14	1.3	18
	Target year (projected values)		
Low income	9	1.0	9
High income	9	2.0	18
Total	18	1.5	27

[a] The definitions of low and high income used in the base and target years are the same.

From the above it is evident that the health demands method can vary from being relatively simple and applicable in many developing countries, to being quite complex and requiring far more data than are available in most countries, developed or developing. The decision whether this method is appropriate or not will depend in large part on the size of the private sector and on how the public sector views its responsibility for the provision of health services, i.e., anticipating demands but not seeking to shape them, or seeking to shape and direct the course of the health sector.

The health demands method can vary greatly in complexity and data requirements; it can be very useful in some kinds of planning situations.

Each of the methods presented in this session provides a basis for the estimation of future manpower requirements. The resulting estimates

All methods provide estimates of requirements, but the level of detail and precision required will vary widely.

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[*] Hall, T.L. and Mejia, A., ed. Health manpower planning: principles, methods, issues. Geneva, World Health Organization, 1978 (Chapter 3, p. 70).

can vary from being very detailed and precise, to being quite general. The degree of precision required will vary from one situation to another, and will depend on such considerations as the degree to which the projections can be used, planning capabilities, data availability, the degree of uncertainty that exists about the future, the length of the planning period, and the level of detail used in the supply projections. Judgements on these matters must rest with decision-makers as well as with those directly concerned with planning.

ILLUSTRATION

SERVICE TARGET METHOD

The problem for a new TB vaccination programme - how many additional staff?

In this illustration, a complete calculation is made for a tuberculosis programme of surveillance and treatment which is to be augmented by vaccination of children. The staffing requirement for the old programme of surveillance and treatment remains as it was and is not discussed. The issue is the number of additional staff that must be recruited to meet the needs of the new programme of vaccination.

Describe activity target.

The target for this programme is to vaccinate with BCG vaccine 75% of all children up to the age of 14 years in five years.

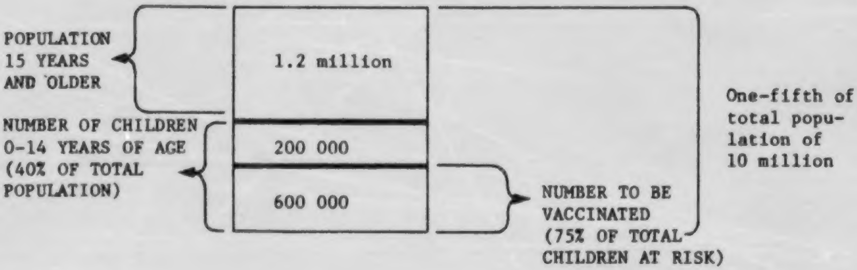
Describe relevant population characteristics.

The demographic characteristics are as follows:

- population, 10 million;
- 40% in age-group 0-14 years;
- population growth, 2% annually;
- crude birth rate, 40/1000;
- crude death rate, 20/1000;
- 50% of all deaths occur in the 0-4 age group;
- very few deaths occur in the 5-14 age group;
- 2% of the population are in the 15-year old age group.

Assume that one-fifth of the target population is to be vaccinated in each of the five years. Thus, the number of the present population to be covered each year is 2 million and the number vaccinated is 600 000 i.e.

Calculate number of services (vaccinations) required.


POPULATION 15 YEARS AND OLDER
1.2 million
NUMBER OF CHILDREN 0-14 YEARS OF AGE (40% OF TOTAL POPULATION)
200 000
600 000
NUMBER TO BE VACCINATED (75% OF TOTAL CHILDREN AT RISK)
One-fifth of total population of 10 million

However, each year there are changes in the population.

Correct service calculation to allow for births, deaths and leavers from age group.

Births: Each year the total number of new births =

$$N_B = 10 \text{ million} \times \left(\frac{40}{1000}\right) = 400\ 000$$

Deaths: 20 per thousand die each year and, of these, 50% are in the 0-4 year age group. Death rates for 5-14 are low and for practical purposes are assumed to be negligible. Thus, the number in the target vaccination group who die each year =

$$N_D = \frac{(50\% \times 20)}{1000} \times 10 \text{ million} = 100\ 000$$

Leavers: The number who move from age 14 to 15 years is approximately 2% of the population. However, every year 75% of one-fifth of them are vaccinated and the rest move out of the vaccination group. Thus, the number who leave the target group each year =

$$N_L = \frac{2}{100} \times 10 \text{ million} \times (1 - 0.75 \times 0.2)$$

$$N_L = 170\ 000$$

Thus, approximate yearly addition in vaccination requirement over the original base estimate

= 75% of ($N_B - N_D - N_L$)

= 75% of 130 000

= 97 500 vaccinations per year.

Thus, to achieve the specified target will require a total vaccination of 600 000 + 97 500 per year, an increase of more than 16% over the estimate when new births are not considered. These approximate calculations have provided:

- a quantitative description of the services, and, hence,
- a quantitative basis for determining manpower requirements year by year.

To translate the vaccination target into staff required, the first step is to determine how much of the service-staff time is available to provide the service (vaccination).

Calculate available time for technical service for each vaccinator.

Firstly, estimates of non-service activities of these staff are made.

Leave	4 weeks
Public holidays	2 weeks
Sickness, absenteeism (from past records) - on average	2 weeks
Staff in service training - on average	2 weeks
TOTAL:	10 weeks

Thus, of 52 weeks potential time a year, 42 weeks are left when the staff member is available for service.

Secondly, supporting activities linked to the service activity are taken into account:

Administration and reporting (average)	4 hours/week
Supervision	none
Travel time to and from village	4 hours/day or 20 hours/week
TOTAL:	24 hours/week

This leaves 42 x 16 = 672 hours per annum for actual vaccination assuming there is a 40 hour week.

Determine mean time for one service activity.

For the purposes of this example, it is assumed that the vaccinations are carried out at community centres, and that on an average it takes two minutes to administer the vaccine, including time to settle the children and explain the purpose of vaccination to the parents. Thus:

> For one vaccinator working for a year, the total number of children who could be vaccinated would be:
>
> 672 hours x 30 vaccinators per hour = 20 160

Divide services required by amount of service provided by one person in a year to get total requirement of full-time equivalent staff.

Thus, to vaccinate 697 500 children per year (the number to meet the target) would require:

$$\frac{697\ 500}{20\ 160} = 36 \text{ vaccinators.}$$

In addition to these 36 vaccinators, support staff would also be needed. The need for support staff is often ignored, particularly non-medical staff, and this can affect the administration of the technical service.

Thus, to complete the picture, the need for other staff in support of the vaccinators must be determined. Such an exercise might lead to the following results.

Requirement: one doctor for entire national programme	MEDICAL STAFF	A coordinator and project director will be needed. He probably should be a specialist in tuberculosis although other public health medical officers may be suitable. It will be a full-time post.
Requirement: (36 vaccinators divided by four) equals 9 supervisors *plus* *one supervisor to stand in when others are absent*	TECHNICAL STAFF	For field supervision and coordination, one supervisor for every four vaccinators is needed, or six in all. Coverage for absenteeism needs to be provided. Given that the annual absences of each supervisor are likely to be 10% of the working time, one additional supervisor is needed who will be assigned to the programme director's office.
Requirement: statistician (0.2 F.T.E.) *plus* *one statistical assistant*		Information on the progress of the vaccination programme will have to be collected, summarized and analyzed. This will require the services of a part-time statistician and a full-time statistical assistant.
Requirement: (0.1 F.T.E.) pay roll clerk	ADMINISTRATIVE STAFF	The additional work load will fall on the payroll unit for salary, allowance calculations, and payments.
Requirement: (0.2 F.T.E.) warehouseman	GENERAL SERVICE STAFF	There will also be additional work for the supply warehouse in packaging and processing two deliveries a week to the field teams.
Requirement: (10 drivers)		To ensure movement of staff, supervisors, and supplies, ten drivers will be needed.

Total staff requirement for the tuberculosis programme as a whole is the number required to maintain the existing programme, plus staff (shown above) for the child vaccination programme.

This is the staff needed if the vaccination programme is to run uniformly for the five years of the plan. If there is a delay in starting the programme or recruiting staff, the work load in the remaining time will be higher and more staff will be needed.

Programme changes require staff changes.

Finally, if the vaccination coverage is to be maintained, there will be a continuing need for staff to serve approximately 400 000 births a year. In this case, a number equivalent to slightly more than half the staff in the development project will be needed to maintain the programme.

Some projection should be made for continuing manpower needs at the end of the plan period.

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EXERCISES

EXERCISE 1. Estimating Manpower Requirements

Instructions: Match each requirement estimation problem with the proper method(s), based on the information provided. When more than one method fits, list your choices in descending order of preference.

Estimate the requirements for:	Preferred method(s) Need = N; Demand = D; Targets = T; Ratios = R
1. Primary health care personnel for a province now almost entirely without care	
2. Private dental practitioners	
3. Laboratory technicians for government hospitals	
4. Midwives for a public maternal care programme in a very underserved rural area	
5. Anaesthetists for regional public hospitals	
6. Family planning promoters for an urban population	
7. Pharmacists for private pharmacies in a region where the current supply/demand balance appears adequate	
8. Specialist paediatricians for regional government hospitals	

9. Microscopists for the surveillance phase of a malaria eradication programme	
10. Nurses for inpatient care in new government hospitals	
11. Physicians to serve on the faculties of new medical schools	
12. Physicians for a fee-for-service medical care programme to white-collar employees with health care benefits through their social security programme	
13. Dental auxiliaries to provide basic care to primary schoolchildren in a pilot programme	
14. Extension of medical assistants to a province now without any, based on the experience of using them in another similar province	

EXERCISE 2. Estimating Manpower Requirements

Instructions: For each manpower planning situation indicate the method(s) you would select.

Planning situations	Preferred method(s) Need = N; Demand = D; Targets = T; Ratios = R
1. Past experience suggests a reasonably satisfactory balance between manpower supply and demand	
2. A primary consideration is that the manpower projection be economically feasible	

3. Detailed information is available about manpower productivity, morbidity, and the probable effectiveness of health services	
4. The health problem under consideration is of relatively low priority but of high social priority for individual people	
5. Experience in other countries with similar development programmes has been reasonably satisfactory for the manpower category being planned	
6. A major objective is to provide communities with the number and "mix" of manpower that will provide them with at least an acceptable minimum level of health care	
7. As a baseline projection it is intended to ensure that the health care demands of defined populations will be satisfied to at least the same degree as they are now	
8. The primary concern is about manpower categories that provide direct services to patients	
9. The primary concern is with manpower categories that support other categories and/or provide indirect services to patients (e.g., laboratory technicians)	
10. Manpower is to be provided to deal with health problems for which there are well-established technologies	
11. A variety of services have to be provided, many of which might not be considered of high social or public concern but which satisfy individual needs	
12. The primary objective is to maintain the present position with minor improvements, of a specific manpower category	
13. Most of the services being planned are in the private sector	

14. Public control over the ways of using manpower is limited	
15. The government has an active manpower policy and has undertaken to extend and improve the health care system	
16. The health conditions being treated are extremely varied and/or are ones for which health technologies are not yet well established	
17. A sound model of manpower requirements for a given type of health programme in a given region has been elaborated; the aim now is to estimate the manpower requirements of the same services to a a similar population elsewhere in the the country	
18. The health sector is under a substantial degree of control	
19. Government manpower policies are primarily concerned with ensuring an adequate supply of manpower in response to market forces of demand, without promoting any substantial modification of these forces or of the health care system	

EXERCISE 3. Indicate below the main methods used in recent years in your country to estimate future needs of the manpower categories specified. Comment on their suitability, noting especially any important limitations they may have for those purposes. If you do not know of any studies in any of these categories, substitute other categories that you know about.

Manpower category (Specify further if necessary)	What were the stated objectives of these projections?	In which year (approx) were the projections made?	Which methods were used to make the projections of requirements? What are your views on their suitability? What do you consider to be their main limitations or constraints for manpower planning?
Physicians			
Nurses			
Rural primary health care workers (not physicians or nurses)			

Use additional sheets as necessary

EXERCISE 4. Utilization and Activity Analysis

Select one type of field worker and one type of institutional staff member and outline the contents (headings) of a table specific to these workers from which you could estimate:

- the amount of working time in a year,
- the amount of time spent on each of the major service activities, and
- the amount of time spent on the provision of each specific type of service or activity.

After preparing the table(s), complete with your own estimates of what numbers in the table might be in terms of available time, etc.

Assume you would like to determine by observation the information needed to complete the table:

- estimate how many staff you would want to study to be reasonably satisfied with the accuracy of the observation, and
- estimate how quickly such a study could be done from initiation to final conclusion.

Prepare answers to the questions in this exercise with a justification of the reasons for your views; discuss in plenary with a view to establishing a concensus about the performance of these two types of workers.

EVALUATION QUESTIONNAIRE FOR SESSION 5

Date______________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

	Not at all	Poorly	Fair	Well	Very well
1. Describe 4 basic methods to estimate manpower requirements.	☐	☐	☐	☐	☐
2. Select and use a method that best fits specific planning needs and circumstances.	☐	☐	☐	☐	☐
3. Specify the main kinds of information needed for the 4 methods.	☐	☐	☐	☐	☐
4. Evaluate current estimates of manpower requirements in your country and assess their validity.	☐	☐	☐	☐	☐

	Not at all	A little	A fair amount	Most of it	All of it
2. Did you read any of the learning material before the session?	☐	☐	☐	☐	☐

3. Was the learning material:

	Not at all	Some-what	Fair	Moder-ately	Very
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

	Not at all	Somewhat	Fair	Moderately	Very
4. Did you find the illustrations:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐
5. Did you find the exercises:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

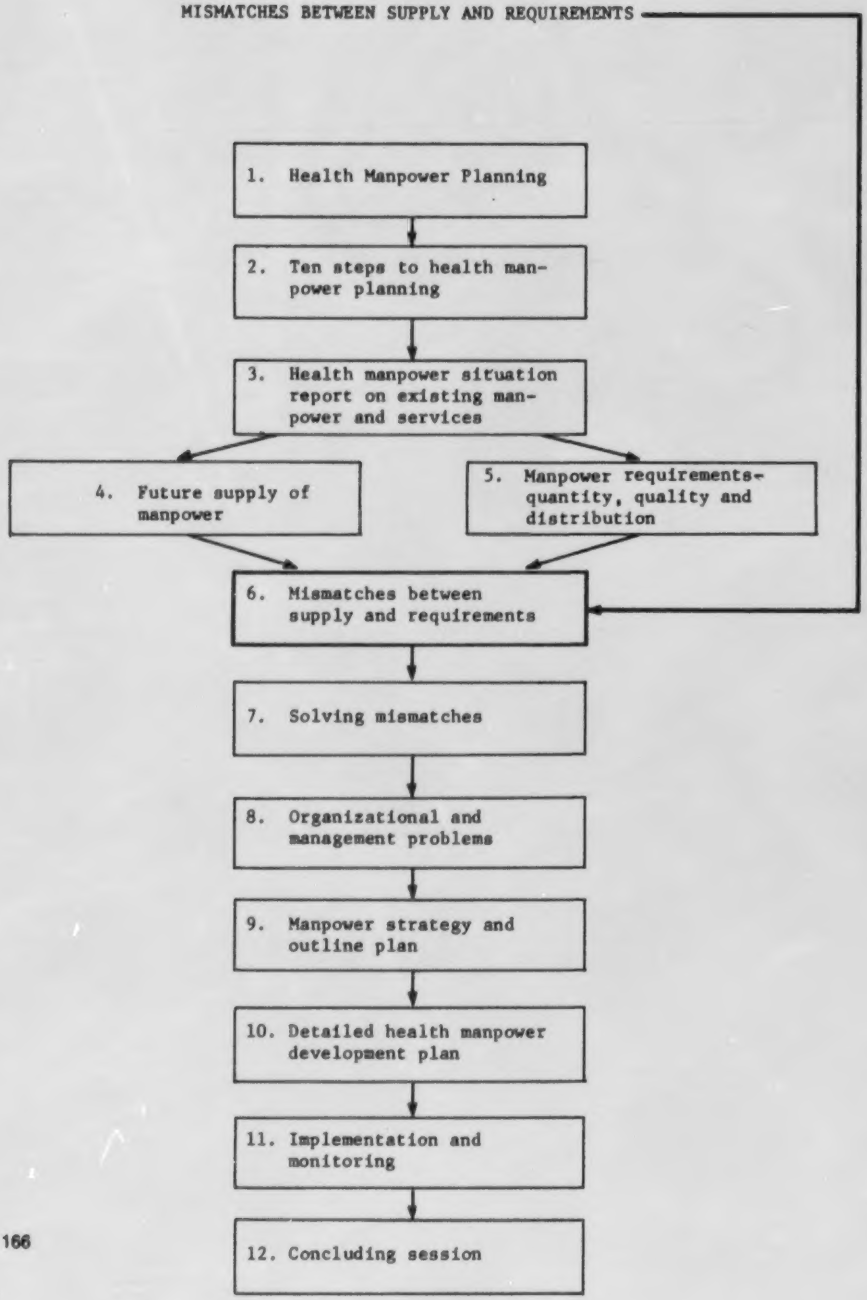
8. Do you have any other comments?

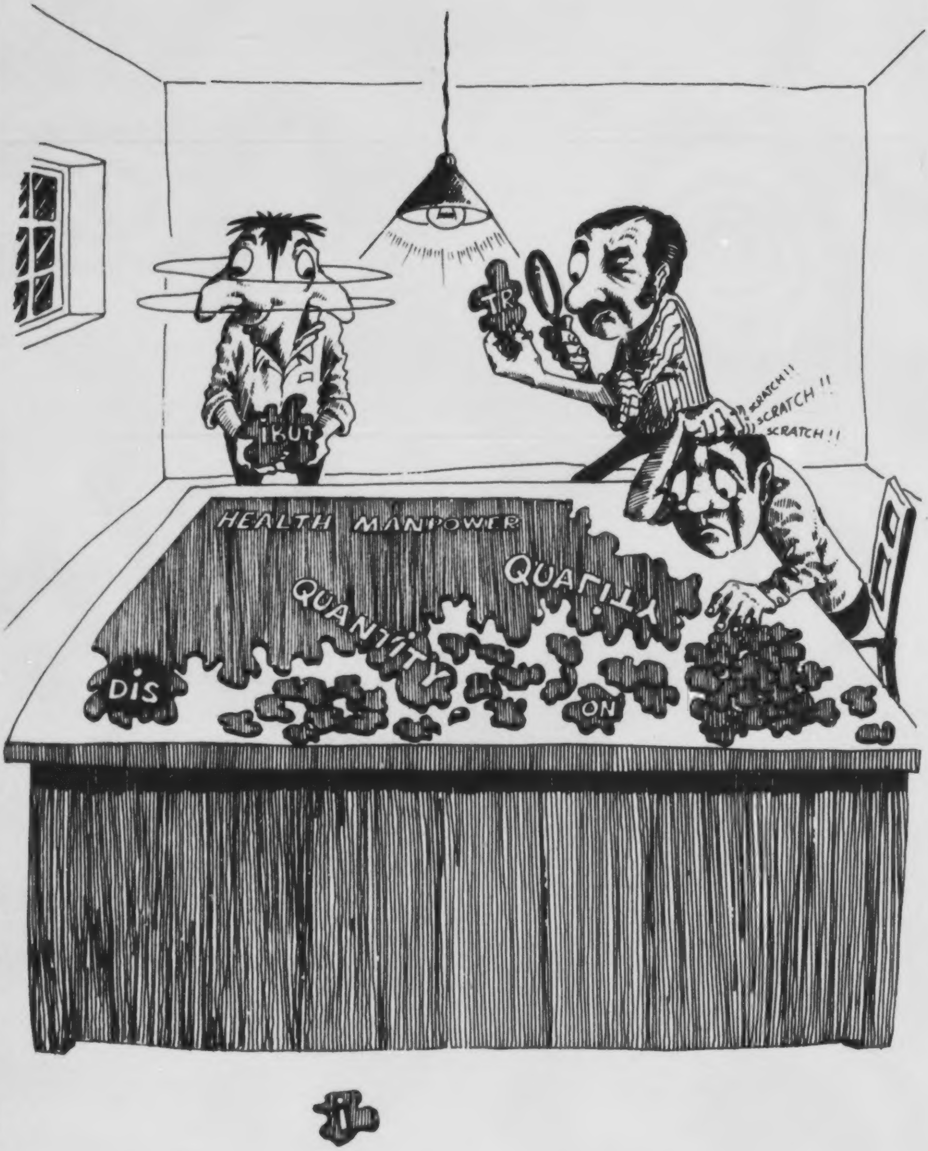
Name ______________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION 6

MISMATCHES BETWEEN SUPPLY AND REQUIREMENTS


MISMATCHES BETWEEN SUPPLY AND REQUIREMENTS
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session



BUT
TR
SCRATCH!!
SCRATCH!!
SCRATCH!!
HEALTH MANPOWER
QUALITY
QUANTITY
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i

MISMATCHES

SUMMARY

Manpower requirements and supply projections can only be compared if both refer to the same manpower categories measured in the same units (usually full-time equivalents) over the same time periods. Different factors will limit the level of detail the two projections can achieve.

The process of comparing manpower supply and requirement projections, and of identifying mismatches between the two, is accomplished in three steps as follows:

1. producing a table showing both manpower requirements and supply projections in the same terms for a given staff category to identify where the mismatches are;

2. selecting the more important mismatches for further attention; and

3. exploring the mismatches by means of a systematic analysis to determine causal factors leading to the mismatch and potential opportunities for solution.

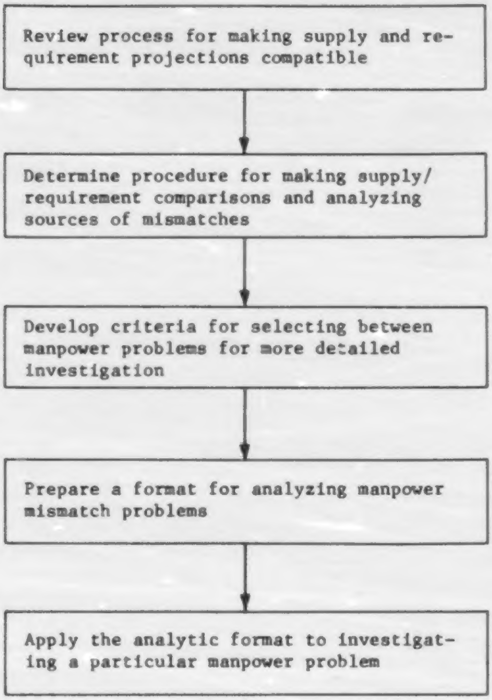
The product of this phase of the manpower planning process is a quantitative statement of the size and nature of the mismatch between manpower requirements and supply, combined with a statement of likely causal factors and areas of investigation for finding solutions.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Reduce projections of supply and requirements to a common base in order to make comparisons and identify mismatches.
2. Devise and apply criteria for selecting which manpower problems should be subjected to more detailed investigation.
3. Analyze manpower problems using a systematic approach which permits isolation of causal factors and identification of possible solutions.

SESSION STRUCTURE



Review process for making supply and requirement projections compatible

Determine procedure for making supply/requirement comparisons and analyzing sources of mismatches

Develop criteria for selecting between manpower problems for more detailed investigation

Prepare a format for analyzing manpower mismatch problems

Apply the analytic format to investigating a particular manpower problem

LEARNING MATERIAL

HOW DO SUPPLY/REQUIREMENT MISMATCHES OCCUR ?

Imbalances between manpower supply and requirements occur because either the supply of staff is more or less than anticipated or the requirement has changed from what it was previously. The imbalances or mismatches between supply and requirements can thus arise from a variety of causes, e.g., because of:

Changing staff number, distribution, and quality alter balance between manpower requirements and supply.

- planned expansion of health services;
- political intervention in the development process;
- low morale of staff;
- administrative breakdowns;
- inequalities in training standards;
- more trainees fail than anticipated;
- staff productivity and efficiency are less than expected;
- other training, administrative, and utilization actions that change staff performance.

A manpower planner usually is faced with problems of the supply of staff not matching the needs so that the growth of services is unnecessarily constrained. Occasionally, the supply of staff may outstrip the demand. This may occur when a project is closed down. In this situation, the planner is posed with problems of how to absorb redundant staff.

Problems of total supply/requirement imbalance are among the most common encountered in making projections.

In general, a mismatch situation is such that one or more of three basic problems related to number, distribution, or the use of staff must usually be resolved, i.e.,

There are 3 basic planning problem areas: numbers, distribution and skills of staff.

1. The number of staff in a particular category (doctors, nurses, etc.) is too small or too great for future programmes.

2. Staff are badly distributed for present needs, or their distribution does not suit plans for the future.

3. The training of staff, and their skills and motivation, do not accord with programme needs.

WHAT SHOULD BE COMPARED WITH WHAT ?

To compare mismatch between requirements and supply, they must first be specified in identical terms.

In Sessions 4 and 5, methods of projecting future staff supply and future staff requirements were discussed. Very often the type, quality and level of detail of the information available for making these projections will vary considerably for different types of staff and between the supply and requirement sides of the picture. As a result, to make a comparison between supply and requirements necessitates modification of the projection statements so that both supply and requirements are presented in comparable terms, i.e., they:

- cover the same manpower categories, including not only type (doctor, nurse, etc.) but also the same groups as defined by qualifications, functions, hierarchy, clients served, location, etc. (e.g., all medical auxiliaries in a particular region, all malaria programme staff);

- are expressed in the same units (e.g., full-time equivalent (FTE) personnel); and

- relate to the same time period.

Only when the supply and requirement estimates agree in all these respects is it possible to compare them to establish the degree of mismatch.

For both supply and requirement projections, the planner will be limited to the level of detail established by the methods used to make the projections and the accuracy of the basic estimates. In other words, if his supply projection is available only for the total number of nurses in the country as a whole and for the aggregate leaving rate and rate of additions, then from these figures alone it will be impossible to project the number of nurses for different regions, for different functional categories, and so on. Similarly, if requirements are based on a ratio of one nurse per 5000 population, he will be unable to provide further detail for this projection on the basis of such factors as qualifications, functions, skill levels, etc.

Level of detail used in making projections will determine the extent to which they can be disaggregated to examine imbalances.

If the levels of detail in the supply and requirement projections do not match, it is normally the case that the more detailed figure must be brought down to the level of the other by selection and/or aggregation so that both match. If, for example, a supply projection gives a figure for each year of a five-year plan but the manpower requirement is available only for the end of the planning period, then the figure for the final year of the supply projection must be selected for comparison and the other four supply projection figures ignored.* In this case, projected supply and requirements may match at the end of the planning period, but it is impossible to say whether they will match during it. Similarly, if manpower requirements for a certain group of staff have been produced for each region but the supply projections for this staff can be made only for the country as a whole, then the regional requirements must be

Comparisons between supply and requirements can only be made down to shared level of detail.

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* Approximate values for the intervening years can often be obtained by interpolation. However, the planner must decide whether the changes that occur from year to year are apt to be arithmetic (same size of change each year), geometric (same rate of change each year but different numbers), or disjointed (as would be the case with a new school which starts graduating professionals two years into the five-year plan period).

totalled to give a national figure before any comparison of supply and requirements can be made. Furthermore, even if this comparison shows the two to be in balance, a regional imbalance is still possible.

Comparisons should be made in the maximum detail possible.

It is often disadvantageous to lose detail from manpower figures, and the manpower planner can use some devices or tricks to avoid it. The most widely used is to break a total figure down into its constituent parts by using a set of proportions. For example, if, as noted above, a regional comparison is desired but only a national supply estimate in five years' time is available, it may be sufficient to divide this national estimate according to present regional proportions or those that are expected in five years' time.

Whatever the detail of the supply and requirement projections originally produced, they must be brought to the point where they cover the same groups of staff measured in the same units and relating to the same time period(s).

HOW ARE THE COMPARISONS USED ?

Six steps in resolving the problems:

When the correct figures have been selected for comparison, the following six steps can be taken:

- where are the mismatches?

1. Identify the mismatches between projected supply and requirements, i.e. where are the potential manpower problems and difficulties?

- which problems need further study?

2. Select relevant problems or difficulties for further study, i.e. which of them are important enough to warrant further study? Here it may be necessary to note that several problems may be related and, while none may be important in itself, they become important when taken together.

- what types of problems are they?

3. Decide what type of problem it is, i.e. what particular aspect of the situation needs to be corrected - training, other recruitment, leaving rates, etc.?

4. Review possible actions, i.e. what policies could be introduced or actions taken to correct the situation?

- *what corrective actions might be taken?*

5. Identify the constraints, obstacles, and consequences of these actions, i.e. what are the benefits and costs (in the widest sense of these words) of taking these actions?

- *what are the benefits and costs of taking action?*

6. Assess the significance of the constraints, obstacles, and consequences of these actions, i.e. how important are the benefits and costs of taking these actions?

- *what is the significance of these benefits and costs?*

This session is concerned only with the first three of these steps, the second three being taken up in Session 7 which is concerned with resolving mismatches.

We now consider in more detail each of the first three steps in turn.

WHERE ARE THE MISMATCHES ?

In Step 1, identify the mismatches between supply and requirements.

First, to identify the mismatches between projected supply and manpower requirements, set out the data on manpower requirements as a series of tables, each of which covers a major staff group. For example, one table may be on staffing in rural clinics, another on an immunization programme, a third on water supply, and so on. Each distinct group of staff is given a separate line in the table, and there is a column for each year of the forecast. If requirements are specified for each year of the five-year plan, each column of the table will be filled in. If the requirement is given only for the end of the five-year plan, only the last column of the table will be filled in. If only a total estimate covering several lines of the table is available, then the component estimates which are not available will be left blank. When this is finished, the data from the baseline supply projection for the same staff is entered on the same diagram. Comparisons can be made only between numbers in the same cell or entry in the table. Table 6.1 is an example of such a table.

Table 6.1. COMPARISON OF MANPOWER REQUIREMENTS AND SUPPLY FOR A FIVE-YEAR PLAN FOR ONE PROGRAMME

GRADE	Year 1 Req./Supp.	Year 2 Req./Supp.	Year 3 Req./Supp.	Year 4 Req./Supp.	Year 5 Req./Supp.
GRADE A					
Region 1	34/33	37/36	42/40	45/41	50/43
Region 2	27/27	30/27	32/27	36/27	39/27
Region 3	40/35	45/40	50/44	55/47	60/50
TOTAL	101/95	112/103	124/111	136/115	149/120
GRADE B					
Region 1	-/102	-/110	-/120	-/130	-/142
Region 2	-/90	-/91	-/96	-/102	-/117
Region 3	-/111	-/120	-/130	-/142	-/162
TOTAL	318/303	340/321	370/346	400/374	450/421
GRADE C					
Region 1	-/-	-/-	-/-	-/-	912/-
Region 2	-/-	-/-	-/-	-/-	841/-
Region 3	-/-	-/-	-/-	-/-	1005/-
TOTAL	-/1812	-/1972	-/2104	-/2300	2758/2500

This is an example of a table for three personnel grades (A, B and C) in three regions (1, 2 and 3) for a five-year plan. Since all the detail for Grade A is available, comparisons between projected supply and requirements for this grade can be made in each region in each year, as well as the total for the country. For this grade of staff, the baseline supply projection shows an increasing staff shortage, particularly in Region 2 towards the end of the planning period, when no increase in Grade A can be expected if current policies continue. For Grade B, the supply projections are available for each region in each year of the plan, but the manpower requirement estimates are available only for the country as a whole. The figures show a 5% shortage in year 1, increasing to a 6.5% shortage in year 5, but the projected regional requirements of Grade B staff cannot be determined. In this case it might be sufficient to divide the total requirement for Grade B staff in each year among the regions in the same proportion as the requirements for Grade A staff shown in the upper portion of the table, and to compare these estimated requirements with the equivalent supply projections. Regional requirements are available for Grade C personnel for the end of the planning period only, and supply projections are available for each year of the plan, though only as national totals. The only comparison possible here is the total figure in year 5 (which shows a projected shortage of 9.3% if present policies continue) unless proportions are used to divide the national figures between regions or the final figures between years.

Example of Step 1 in comparing supply and requirements.

WHICH PROBLEMS MERIT FURTHER STUDY ?

Because of their sensitivity or complication, some of the mismatches, once identified, will merit more detailed attention to clarify the nature of the issues involved. However, since further analysis will take time and use up planning resources, only the more important problems or difficulties should be considered in this way.

In Step 2, select certain mismatches for further attention because of their sensitivity or complication.

Various criteria can be used to determine which issues to examine.

The second step in the process is thus to determine which problems warrant further study, given the constraints of time available and effort involved. The situations to consider when making this selection include those in which:

- the percentage mismatch is large, e.g., even if the group is relatively small in size, the actions to be taken to resolve the mismatch will probably have to be quite drastic;
- the size of the group is large, e.g., even if the comparison shows a relatively small shortage, it may require new plans to recruit and train many staff;
- the staff group concerned has been given a lot of public attention, and is likely to be the focus of attention for those reading the report (these groups of staff should have been identified and highlighted in the Health Manpower Situation Report, covered in Session 3);
- several types of staff work together as a team and a relatively small shortage of one type can affect the performance of all the other types of staff;
- several types of staff work independently but on the same health problem, and relatively small shortages in each can combine together to produce a serious effect.

The manpower planner must judge how many issues can be examined in detail.

Taking these factors into account, the manpower planner must judge how far his resources will extend and which of the mismatches he has identified can be selected for further attention.

WHAT IS CAUSING THE MISMATCH ?

In Step 3, the type of problems which have led to the mismatch are identified.

The third and final step in measuring mismatches is to identify in specific terms what type of problem has led to the mismatch. The mismatch may well be caused simply by a large change in requirement, but nevertheless it is normal to look first at the mismatch as a problem in supply and only as a last resort to see it as a problem in requirements. On this basis, any manpower problem (viz. mismatch) should be analyzed in terms of five headings relating to the supply of staff. These are:

All manpower problems should be analyzed in terms of 5 major headings:

(1) The total number of staff employed. The problem may be one of too few or alternatively too many staff of a particular type. The source of difficulty in the case of too few staff may be that, for the level of staff requirement stated, training volume is too low or recruitment is not proceeding quickly enough or, yet again, staff are leaving the service at too fast a rate. Alternatively, if the problem is an expected surplus of staff, then training, recruitment or redeployment of staff may be too high.

(1) Total number of staff employed

(2) The distribution of staff. In this case, while the total number of staff may be sufficient, their distribution may not accord with the way requirements for staff are spread around the country. This inappropriate distribution may have its roots in problems of sufficiency of incentives or of facilities or in career opportunities. The manpower planner will wish, therefore, not only to assess the extent of the maldistribution but also the causal factors leading to the observed situation.

(2) Distribution of staff

(3) Skill/knowledge of staff. In many situations, it may well be that total staff and their distribution is appropriate to requirements but essential skills are missing or they are not sufficient to the needs or, exceptionally, are in excess of the needs. In such situations, the manpower planner looks to problems of coordination between training institutions and the health service and to the existence or lack of it of in-service training programmes and refresher courses as both sources of problem and remedy.

(3) Skill/knowledge of staff

(4) Work organization and staff productivity

(4) Work organization and staff productivity. The calculated requirement for staff is likely to have been based on current patterns of work, concepts of the productive time available, and the tasks that can be completed in a given unit of time. Apparent shortages of staff may well arise simply because work organization or staff productivity have not reached the expected standard or because a higher level of productivity becomes necessary and for this a search needs to be made for the sources of non-productive work time, or low productivity.

(5) Duration of the problem

(5) Duration of the problem. The degree of permanence, length of time, or anticipated speed of occurence of a mismatch has significant influence on the type and range of solutions open to the manpower planner. For this reason, the manpower planner needs to identify at this problem identification stage whether the problem is a short- or long-term one or poses a mixture of both short- and long-term issues.

The manpower planner will find it extremely useful to consider every manpower problem under each of these five main headings to get as wide a view as possible of the potential changes that may be made to alleviate or solve the problem.

This approach provides a basis for a systematic analysis of the likely causes of the mismatches.

Through this approach a systematic analysis of potential causal factors leading to the mismatch can be made. A sample table suggesting a step-by-step review under each of these headings is shown in the Illustration to this Session (Table 6.2). This table provides a series of headings which are intended to direct the manpower planner down different lines of inquiry. It is not possible to make a table which will apply to all countries because the significant problem sources will vary from one country to another and will very much depend on a variety of external factors such as the pattern of health service operation or whether there is a private health sector of any size, or whether the terrain allows easy transport between regions, and so on. Each national manpower planner must produce his own set of analytic tables to fit the conditions in his country. Having produced it, he has a valuable tool for analyzing problems and setting the groundwork for finding solutions.

An analytic table should be prepared to facilitate problem analysis.

It remains only to be said that typical manpower problems do not necessarily consist of difficulties under only one heading a time, but may well consist of elements of all of them. It is this very complexity which strengthens the need for separating out the elements of the problem under different headings, not only to identify causal factors but also areas of potential action to overcome the mismatch.

Typical manpower problems will contain problem elements under a number of headings simultaneously.

ILLUSTRATION

ANALYZING MANPOWER MISMATCH PROBLEMS

This analytic table is intended as an example of the type of table a manpower planner might construct to aid his analysis of manpower problems. It will vary in format from country to country, depending on the situation and conditions prevailing. The table is constructed in the form of a series of key words to guide the analysis. Thus, for example, the first statement in the table can be translated as follows:

Is it a problem of numbers employed? If yes,

- is it a problem of the number of joiners? If yes,
- is it a problem of the number of experienced recruits joining? If yes,
- is it a problem of the number coming from the private sector? And so on.

6.12

Each of the key words in the table suggests a different line of inquiry and allows the manpower planner to proceed in a systematic fashion through all the possibilities relevant to his country's situation.

Table 6.2. ANALYTIC TABLE FOR INVESTIGATING MISMATCHES

PROBLEM	AREA OF INVESTIGATION FOR PROBLEM SOURCE AND/OR SOLUTION		
1. Numbers employed	1. Joiners	1. Experienced recruits	Number from: 1. Private sector 2. Other sectors 3. Other countries 4. Within health sector
		2. Training output	1. Enough schools 2. Enrollment size 3. Training losses
		3. International training	Number of: 1. Available qualified students 2. Graduates returning 3. Students sent
		4. Recruitment losses	1. Graduation/recruitment coordination 2. Competition from other agencies
	2. Leavers	1. Job changes	Number going to: 1. Private sector 2. Other sectors 3. Other countries 4. Other posts in health service
		2. Discontinued employment	Number leaving for: 1. Marriage 2. Illness 3. Retirement

PROBLEM	AREA OF INVESTIGATION FOR PROBLEM SOURCE AND/OR SOLUTION		
2. Distribution of staff	1. Location of staff	1. Specific localized distribution 2. Countrywide distribution	1. Temporary assignments 2. Permanent staffing 3. Incentive sufficiency 4. Administrative capability 5. Career/skill benefits 6. Available facilities 7. Organization of staff movement 8. Inequality of service conditions
	2. Location of work	1. Institutional locations 2. Population distribution	1. Population mobility 2. Quality of services 3. Relevance of services 4. Local staff mobility 5. Institutional hours of operation
3. Skills/knowledge of staff	1. Sufficiency	1. Skill/knowledge shortage	1. Pre-recruitment training curricula 2. Adequacy of in-service training 3. Capacity of in-service training 4. Extent of refresher courses 5. Staff status and career prospects
		2. Excess skills	1. Coordination between training institute and service 2. Other, resources availability 3. Accuracy of job descriptions
	2. Appropriateness	1. Wrong skills	1. Lack of forward planning 2. Staff redundancy 3. In-service training availability 4. Capacity of in-service training

6.14

PROBLEM	AREA OF INVESTIGATION FOR PROBLEM SOURCE AND/OR SOLUTION		
4. Work organization/productivity	1. Output per unit of productive time	1. Equipment facilities	1. Speed of present equipment 2. Range of functions of present equipment
		2. Preparatory time	1. Pre-packed kits 2. Work plan 3. Operational procedures
		3. Service demand or working time	1. Working hours 2. Quality and relevance of services 3. Appointments system
	2. Percentage of productive time	1. Support activities	1. Support staff availability 2. Support activity organization 3. Extent of administrative requirements 4. Distribution of administrative functions
	3. Total working hours	1. Length of working day 2. Length of working week 3. Holidays, leave and absenteeism	
5. Problem duration	1. Short-term	1. Temporary problem only 2. Part of a long-term problem	
	2. Long-term	1. No immediate difficulties 2. Contains some short-term issues	

EXERCISE

EXERCISE 1. Identifying Manpower Problems

With information on the calculated requirements for different categories of staff over the period of the national health plan and baseline projections of the supply of staff over the same period, it is possible to begin to identify where the two are seriously out of balance. Each example of such a mismatch poses a problem for the manpower planner and he must decide how important the problem is to his work, i.e., how much of his time and effort he can devote to attempting to deal with it.

Having identified the important problems, he must now decide what types of problems they are (numbers, distribution, quality, etc.) and therefore what type of manpower policy could be considered in order to solve them. Manpower difficulties can be solved or at least alleviated in several different ways.

The purpose of this exercise is to evaluate some of the major health manpower problems in your own country.

1. Select a category of health manpower which could give rise to serious difficulties in the next health plan. If possible, select a staff category that has already been covered in Sessions 4 and 5.

2. Specify the type of specific quantitative comparisons between supply and requirements that you would want to make which make practical sense given the way in which these staff are employed in the Health Service.

3. In your judgement indicate the type(s) of problem(s) this staff category is likely to pose. Please consider the possibility of every problem category listed in the analytic table shown in the Illustration. For example,

if the number of physicians per 1000 population in rural areas is too low, this could be viewed as:

(a) a shortage in the number of physicians (in rural areas);

(b) an imbalance in the distribution of physicians (e.g., adequate supply overall, but an urban/rural imbalance);

(c) inappropriate training (providing medical assistants for rural areas might be much more effective than attempting to meet most medical needs with physicians); and so on.

Each different view of the problem suggests different possibilities for taking action to deal with it.

4. Identify which, if any, of these problems should be the subject of further and more detailed investigation and specify what criteria you used or what reasons you had for making this selection.

5. Draw up a table, using as a guide the analytic table in the Illustration, and list, using your own judgement, the causal factors leading to the expected or observed manpower problem. Include also in this listing your estimate of the significance of each factor as compared to the other factors you listed.

EVALUATION QUESTIONNAIRE FOR SESSION 6

Date ______________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

	Not at all	Poorly	Fair	Well	Very well
1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:					
1. Reduce projections of supply and requirements to a common base to make comparisons.	☐	☐	☐	☐	☐
2. Devise criteria for selecting which problems should be investigated in more detail.	☐	☐	☐	☐	☐
3. Analyze manpower problems to identify causal factors and possible solutions.	☐	☐	☐	☐	☐

	Not at all	A little	A fair amount	Most of it	All of it
2. Did you read any of the learning material before the session?	☐	☐	☐	☐	☐

	Not at all	Somewhat	Fair	Moderately	Very
3. Was the learning material:					
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

4. Did you find the illustrations:

	Not at all	Somewhat	Fair	Moderately	Very
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐

5. Did you find the exercises:

a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated

	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:

	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

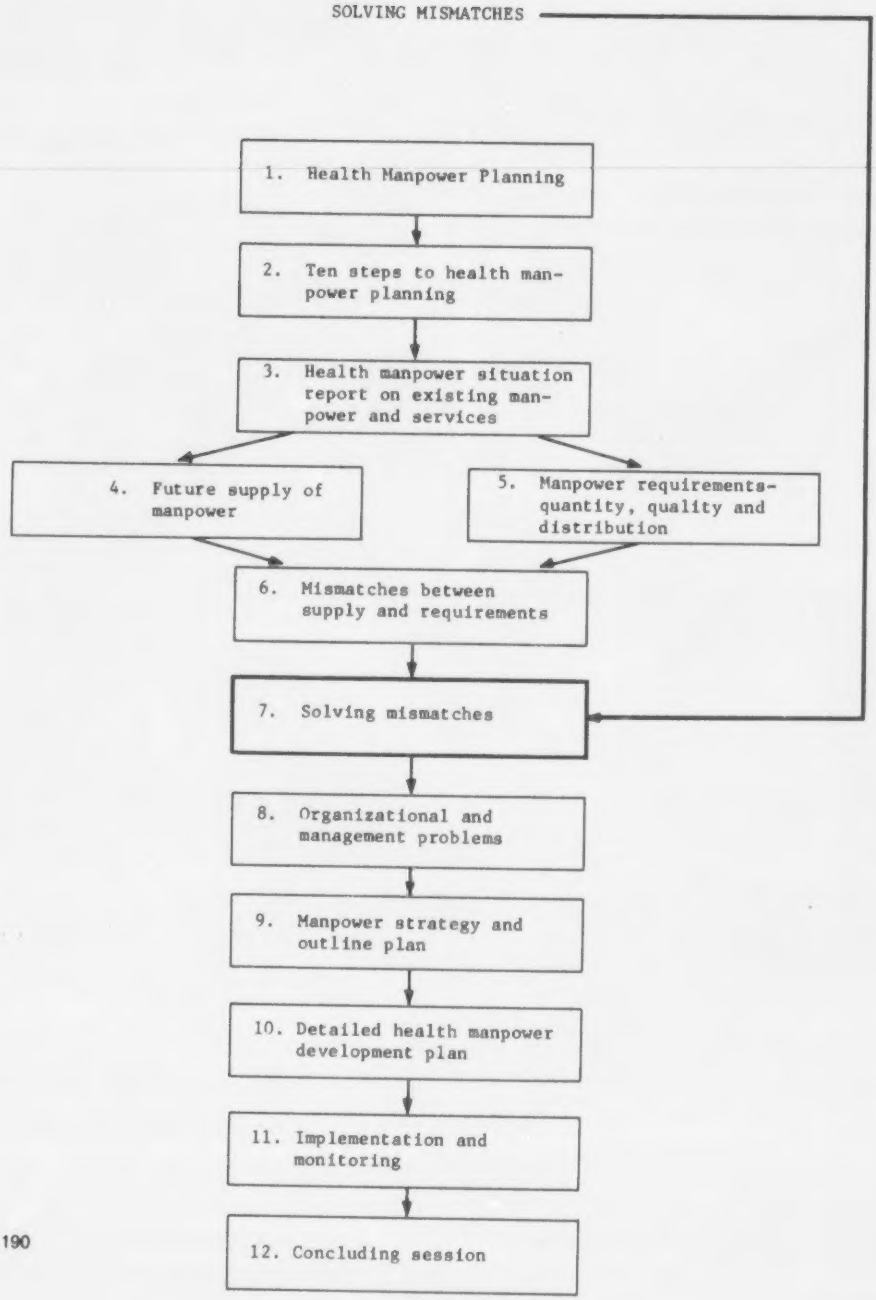
8. Do you have any other comments?

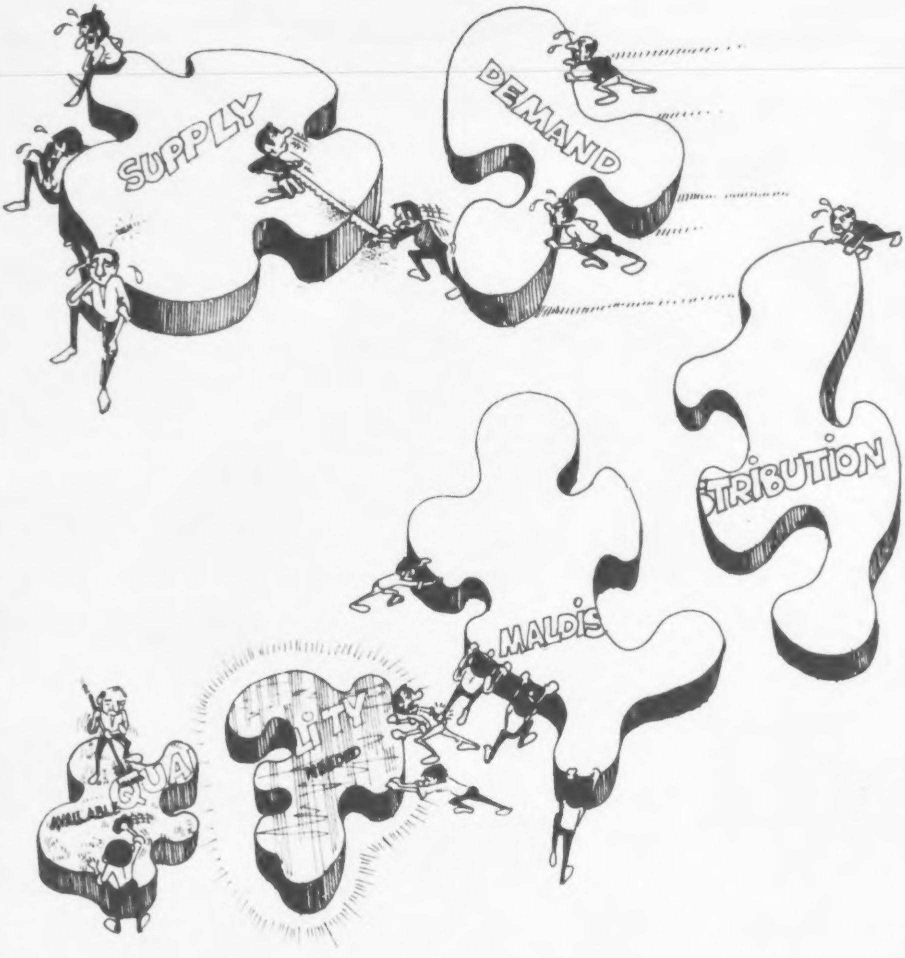
Name ______________________________

There is no need to sign your name unless you wish to do so. Thank you.

SOLVING

MISMATCHES


SOLVING MISMATCHES
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session


SUPPLY
DEMAND
STRIBUTION
MALDIS
QUA
LITY
NEEDED
AVAILABLE

SOLVING MISMATCHES

SUMMARY

The basic characteristics of manpower provide the dimensions of differences between future staff needs and projected staff supply. Solutions to these differences are either long-term or short-term. Long-term solutions differ from the short-term in the type of intervention employed as well as in the time they take to produce results.

Finding solutions involves a three-step process. The first step is concerned with identifying all solutions possible arising from any of the four possible approaches to solving a manpower problem. The second step involves explicit identification of the constraints, obstacles, and consequences associated with each of the options. The third step is concerned with evaluating obstacles and consequences to arrive at an order of merit for good solutions.

Most long-term solutions are concerned with increasing staff availability, and this is brought about by changes in policy, training, administration, and in utilization of staff. Changes made will generally have an impact on the services beyond the particular issue being resolved. Thus, solutions are selected on political, social, and technical grounds, and a wide range of people affected by or engaged in the provision of health care should be concerned with the selection of solutions.

On many occasions, long-term solutions do not provide adequately for short-term needs. For this reason, it is usual to find solutions to manpower problems in the form of "solution packages" with elements to satisfy both short- and long-term issues. Great attention must be paid to the short-term elements of solution packages to ensure that they do not interfere with long-term plans.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. List the range of alternative long-term and short-term solutions available to meet problems of manpower shortages, maldistribution, and quality.

2. Analyze the implications of these possible solutions, especially as they affect training and training institutions.

3. Identify the limitations, constraints, and consequences to the use of each long-term and short-term solution option proposed.

4. Select long-term solutions to meet typical manpower problems, which suit national circumstances and accord with the resource constraints.

5. Select short-term solution options which best suit national circumstances and long-term policies and plans.

SESSION STRUCTURE

Determine a systematic approach to finding solutions to supply/requirement mismatches

Compare the concepts of long- and short-term solution options to manpower problems

Explore steps in the solution finding process and the service implications of particular options

Review constraints and obstacles which might impede the application of a particular option

Evaluate the obstacles and consequences of possible options and determine an order of merit for good solutions

LEARNING MATERIAL

WHAT APPROACH SHOULD BE TAKEN TO SOLVING PROBLEMS ?

Session 6 discussed the making of comparisons between staff requirements for the future and the projected supply. This comparison was made in terms of numbers of staff, their distribution and their quality and productivity, and provided a measure of the imbalance or mismatch existing between desired future requirements and the anticipated supply. These are the basic manpower problems for which the planner must find solutions.

The problem to be solved is some combination of a mismatch between required and supplied numbers of staff, their quality and distribution.

Session 6 (page 6.5) also identified three steps through which the manpower planner could move from problem identification to problem solution. These are:

Finding solutions involves three separate steps.

(1) review possible actions, i.e. what policies could be introduced or what action taken to correct the situation?

(2) identify the constraints, obstacles and consequences of these actions, i.e. what are the benefits and costs (in the widest sense of these words) of taking these actions?

(3) assess the significance of the constraints, obstacles and consequences of these actions, i.e. how important are the benefits and costs of taking these actions?

To get as wide a view as possible of the changes that may be made to alleviate or solve a problem, the manpower planner will find it extremely useful to examine possible solutions in terms of each of the following headings:

Explore the possibilities of finding solutions under five different headings.

- change the numbers employed
- change the distribution

- change work organization/productivity
- change skill/knowledge of staff
- duration of the problem

Solutions are of two types: either long-term or short-term.

This last heading is an important one since different types of solutions can take different periods of time to take effect. Thus, "long-term" solutions are more applicable than "short-term" solutions when mismatches between manpower supply and requirements are expected to continue for many years. Nevertheless, even with a long-term problem, a combination of long- and short-term solutions may be necessary.

Long-term solutions may not meet short-term needs, so the planner has to develop a "solution package" which responds to both the immediate problem and longer-term needs.

For example, one solution for a shortage of nurses, a long-term problem, would be to expand the nursing school. However, four or five years could elapse between the decision to increase enrollment and the graduation of more nurses. This delay may be unacceptable to the policy-makers, especially if there are political commitments. The planner then has to take up short-term options which will result in more staff becoming available much sooner, at the same time awaiting the effects of the school expansion.

Long-term solutions are generally resource-based and short-term solutions are target-based.

Long-term solutions are, in general, resource-based. Although plans are drawn up based on health targets, the targets are often modified to accommodate limitations on the availability of resources. For example, the establishment of a new or expanded nursing school will depend on the money available to build the facilities and to pay salaries of teachers, finding and training the teachers, and, finally, on whether the new nurses can be absorbed and paid by the health services. Some of these solutions may violate some short-term targets which are important principally because of political commitments. For example, although nurses may be in short supply, a commitment might have been made by the government to provide within three years a health centre, requiring nurses, in every district of the country where none existed before. The long-term solution of opening a nursing school or expanding an existing one will not provide new nurses before four to five years. Thus short-term solutions of a temporary nature may need to be applied to fulfill targets which are deemed inviolable. Short-term solutions, thus, are usually target-based, especially when available resources are not adequate.

WHAT IS THE FIRST STEP IN FINDING A SOLUTION ?

The first step in the solution-finding process is to review all possible actions which could be taken.

In the first step of the solution-finding process, the manpower planner considers in detail what actions could be taken under each of the five headings mentioned earlier (see page 7.1). What is feasible in each case depends on what resources are available; other conditions in the country; what changes in rules, working practices, etc., would have to be made; and so on. It is useful at this stage to try to ignore all practical difficulties and set down what is technically feasible, rather than what is thought to be practicable. The selection according to what can be done in reality is taken up later. Separating the two processes allows the constraints and obstacles that might impede solution implementation to be considered explicitly (the importance of being able to do this is explained in Session 9).

Possible actions should be separated under each of five main headings in the form of tables.

Each of the five main headings should be considered in turn and the possibilities set down under each in the form of a table which would be similar in format to the tables developed for problem identification in Session 6. It is impossible to make a table of this type which will apply to all countries, because what is feasible varies from one country to another, depending on whether there is a private health sector of any size, whether there are strong trade unions and staff associations, whether the terrain allows easy transport between different regions, and so on. Each national manpower planner must there fore produce his own set of tables which reflects the conditions in his country. Having produced it, he has a valuable tool for solving manpower problems; it can be extended and adjusted over time as new possibilities for action are recognized or become available, and others become unfeasible because of changes in legislation, etc.

WHAT CAN BE DONE ABOUT CHANGING STAFF NUMBERS ?

Constructing the table of possible actions is best done by first producing a diagram of logical possibilities.

It is usual to construct tables of possible actions by first drawing a diagram in which the logical possibilities for each heading such as "change numbers employed" are set down, each of the possibilities is broken down in the same way, and the process is continued into further levels of detail to a point where individual actions or types of actions or policies are identified. A list of important factors to be considered is usually added to each action specified. The diagram drawn for the first factor, "change in numbers employed," is shown in Figure 7.1. It provides a display of possible avenues of action to "increase numbers"; it also shows paths to decrease numbers with the same set of actions expressed in opposite terms.

Conceptual activities translate into combination solutions of practical changes in training and administration.

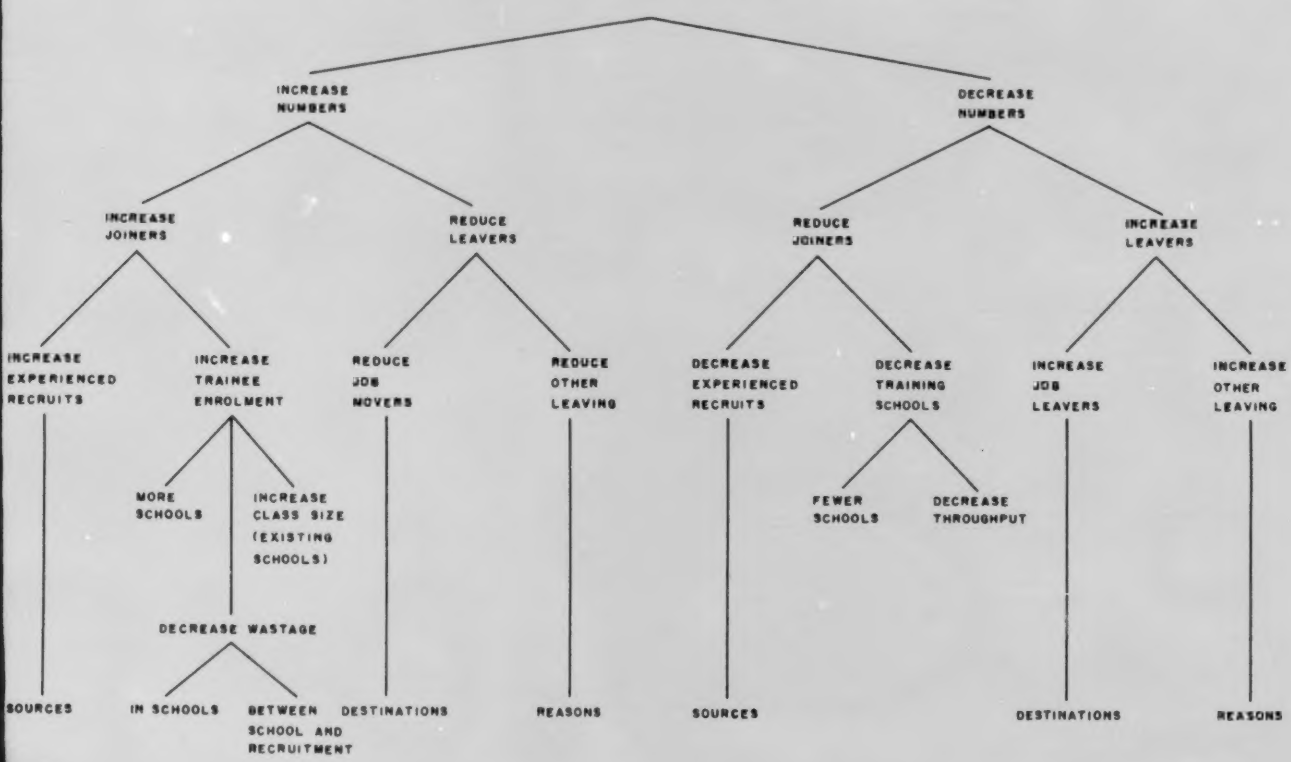
These lines of conceptual activities, when translated into practical activities, may consist of a combination of changes in training and administration. These changes will not be concerned solely with expansion; there can also be changes in operating practices which may lead, for instance, to better motivation and greater retention of staff.

Reducing trainee wastage and expanding institutional capacity will increase staff numbers.

Nevertheless, changes in training are undoubtedly cornerstones for changing the numbers of health manpower employed. As the manpower planner will appreciate, the numbers of staff may be readily increased by:

(1) reducing loss of trainees in training institutions, and/or

Figure 7.1. DIAGRAM TO CREATE SOLUTIONS TO STAFF SUPPLY/REQUIREMENT MISMATCH PROBLEMS


INCREASE NUMBERS
DECREASE NUMBERS
INCREASE JOINERS
REDUCE LEAVERS
REDUCE JOINERS
INCREASE LEAVERS
INCREASE EXPERIENCED RECRUITS
INCREASE TRAINEE ENROLMENT
REDUCE JOB MOVERS
REDUCE OTHER LEAVING
DECREASE EXPERIENCED RECRUITS
DECREASE TRAINING SCHOOLS
INCREASE JOB LEAVERS
INCREASE OTHER LEAVING
MORE SCHOOLS
INCREASE CLASS SIZE (EXISTING SCHOOLS)
FEWER SCHOOLS
DECREASE THROUGHPUT
DECREASE WASTAGE
SOURCES
IN SCHOOLS
BETWEEN SCHOOL AND RECRUITMENT
DESTINATIONS
REASONS
SOURCES
DESTINATIONS
REASONS

(2) increasing the capacity of training institutions.

Reducing the number of training failures is potentially one of the most effective means of increasing the number of qualified recruits. Carefully selecting students who enter training programmes, improving the quality of teaching, and strengthening student advisory or counselling services should reduce training wastage. However, better student selection is feasible only when there is a pool of well-qualified candidates for training; and raising entrants' standards and improving the quality of teaching may take a long time.

Other ways of increasing the supply of staff are to:

(1) improve recruitment practices, e.g., minimize losses between the time of graduation from training and of joining the service. Although the size of the problem varies from country to country, the loss of staff in this way is often equivalent to as much as 15% to 20% of available staff. Quantifying the problem may have the effect of changes being proposed in recruitment practices.

Attracting trained staff back into the service can be a viable alternative.

(2) attract back to the service, trained people who have left. To be able to attract back trained people, one must first understand why staff leave before retirement (see Session 6). This problem arises especially in predominantly female occupations. In some countries, up to 50% of a graduating class of nurses leaves the service within five years.

(3) reduce leaving rates by:

- cash incentives to stay longer;
- providing a career structure that includes opportunities for transferring within the service and better personal counselling;
- improving employee benefits;
- offering opportunities for part-time employment or flexible work schedules;

- providing the staff with better health care facilities and programmes.

Inducing staff to stay longer (i.e., reducing the leaving rate) often reduces the number who leave much beyond what was anticipated. Providing a career structure and supplying employee benefits may, for instance, be an effective inducement. If it is successful, the service may find that in each subsequent year of service, the attrition is decreased further from that of the year before. This occurs, usually, because the longer the staff stay with the service, the less likely they are to leave. Thus, the effect of inducing the staff to stay longer becomes cumulative in its effect.

Reducing early departures can dramatically decrease later attrition.

Proposals to increase staff benefits must be fully examined since they may have implications for other ministries. Nevertheless, improved benefits for staff can often result in higher productivity, at less cost, than more obvious approaches such as recruiting more staff. The changing of personnel policies may also influence qualified staff who have left the service to return. Flexible work schedules may act as special inducements.

Changing personnel policies can be an effective way of retaining and attracting staff back.

If increasing the supply of staff does not meet the projected requirements, then another alternative open is to go to the other side of the equation and reduce the requirements by reducing staffing norms and standards. Reduced or minimal staffing is a short-term option. Figure 7.2 shows, for instance, a part listing of a minimal staffing level for a primary health centre. It presents a minimum staff level which can deliver a low but acceptable volume of the required or planned services for a short period.

If staff numbers are not sufficient, last alternative is to reduce staffing norms and standards.

The minimal staffing approach, while a means to lowering short-term shortages, also can be used in a phased way to deal with long-term shortages. Over the long-term, it is more commonly referred to as "phased development." An example of such a phased or staged development for one type of health post would be as follows:

Figure 7.2. PHASED STAFFING DEVELOPMENT IN A HEALTH POST

	HEALTH POST - TECHNICAL STAFFING	ACTIVITIES
PHASE 1	One health assistant + Two junior auxiliary health workers Total = 3	Primarily mobile clinics with limited public health surveillance
PHASE 2	One health assistant + One auxiliary health worker + One nurse midwife + Four junior auxiliary health workers Total = 7	Static and mobile clinics with increased maternal and child health activities, public health surveillance, and health education
PHASE 3	One health assistant + Two auxiliary health workers + One nurse midwife + Eight junior auxiliary health workers Total = 12	Full range of services provided with intensive public health programmes

CAN ANYTHING BE DONE ABOUT MALDISTRIBUTION ?

A combination of training, minimal staffing and recruitment options may result in the numbers needed being made available, but staff shortages can continue if staff are badly distributed. Cities attract staff, and rural areas are underserved. This problem is illustrated by the following distribution of doctors among capital cities and other areas in several countries.

To overcome maldistribution, deployment of staff must be based on local assignments, inducements, and fairness.

Table 7.1. DISTRIBUTION OF PHYSICIANS IN SELECTED COUNTRIES*

Country	Year	Numbers of physicians per 10 000 inhabitants in:	
		Capital city	Other areas
Argentina	1969	61.0	13.6
Canada	1973	39.9	9.1
Chile	1970	7.9	3.3
Ethiopia	1972	1.7	0.1
Indonesia	1973	2.7	0,1
Iran	1972	11.6	0.8
Kenya	1973	7.5	0.2
Mali	1971	4.5	0.0
Poland	1970	41.3	2.0
Sweden	1970	20.8	2.6
Thailand	1970	8.7	0.2
Yemen	1974	8.9	0.2

To reduce maldistribution, personnel policies such as the following may be put into practice:

- assign staff to areas from which they were recruited as much as possible;
- provide inducements and a confirmed career path, such as accelerated promotion and future assignment to a city or town;

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* Hall, T.L. and Mejia, A., ed. Health manpower planning: principles, methods, issues. Geneva, World Health Organization, 1978 (Chapter 7, p.150).

- ensure that assignments are made impartially, with few exceptions.

Temporary staff transfers may be possible in some situations, though they are often controversial and may lead to adverse effects in the long-term.

Staff may be transferred either permanently or for a short-term. Such transfers, however, can be strongly opposed both by the affected staff and the heads of units or divisions who try to protect their parts of an organization. Transferring staff to areas where they are more needed can be difficult and time-consuming. A well-organized personnel system is necessary to ensure good placements. Interdivisional barriers must also be reasonably flexible to permit staff movement across them.

Re-deploying staff across divisional or functional boundaries also requires firm personnel policies that permit and encourage controlled movement of staff. The cooperation and commitment of different levels of the ministry is necessary.

WHAT CAN BE DONE TO IMPROVE UTILIZATION OF STAFF ?

Changing staff utilization and productivity is another approach to achieving an effective increase in staff.

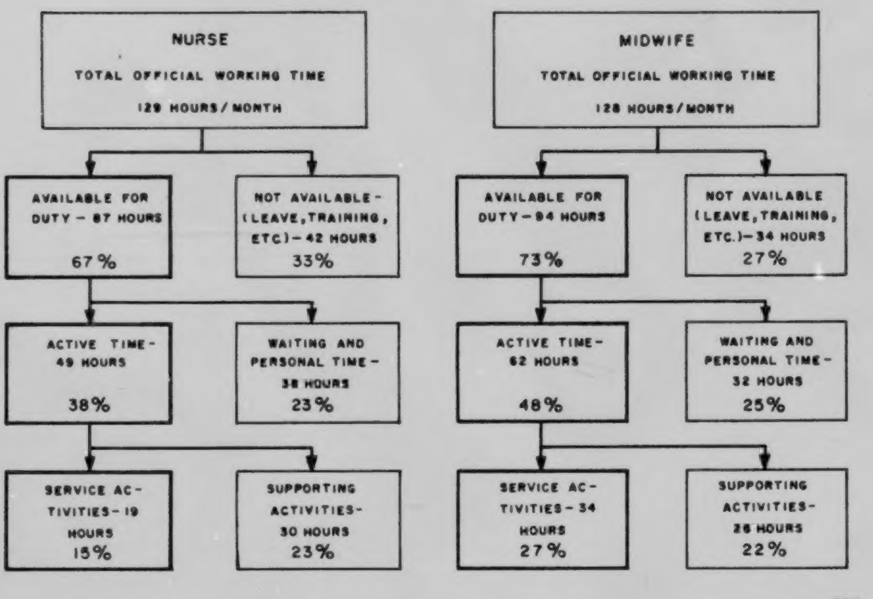
While direct actions to increase the number of staff available or improve their distribution may meet the needs of the situation, each approach does carry with it costs as well as the benefits of more staff. For this reason the manpower planner may wish to explore other possibilities for changing the way staff perform in order to arrive at an effective increase in staff without actually changing staff numbers, in other words, to achieve an effective staff increase by changing productivity or efficiency or work organization. Changes in personnel and operating policies that lead to higher productivity, efficiency, and motivation can have a double effect in that they also can lead to increased staff retention.

Changing staff work patterns can increase productive time but must not be done in isolation from other staff.

In part, minimizing non-productive activities may serve the purpose of achieving higher productivity. Reducing waiting and travelling time may free more time for work. Refining administrative and reporting requirements may have the same effect. Changes in the work pattern of one category of staff will undoubtedly affect others; no group of staff members works in isolation from others. Costs and benefits of any changes must therefore be carefully weighed.

The opportunity for utilizing staff more productively can exist in many different situations. Figure 7.3 shows the results of a study of nurses and midwives in a country. As the figure illustrates, both nurses and midwives were giving only a small proportion of their working time to direct patient care; much of their time was lost in personal work, waiting, and performing supportive activities. Some of this time could have been used productively.

Figure 7.3. USE OF WORKING TIME


NURSE
TOTAL OFFICIAL WORKING TIME
129 HOURS/MONTH
AVAILABLE FOR DUTY - 87 HOURS
67%
NOT AVAILABLE - (LEAVE, TRAINING, ETC) - 42 HOURS
33%
ACTIVE TIME - 49 HOURS
38%
WAITING AND PERSONAL TIME - 38 HOURS
23%
SERVICE ACTIVITIES - 19 HOURS
15%
SUPPORTING ACTIVITIES - 30 HOURS
23%
MIDWIFE
TOTAL OFFICIAL WORKING TIME
128 HOURS/MONTH
AVAILABLE FOR DUTY - 94 HOURS
73%
NOT AVAILABLE (LEAVE, TRAINING, ETC.) - 34 HOURS
27%
ACTIVE TIME - 62 HOURS
48%
WAITING AND PERSONAL TIME - 32 HOURS
25%
SERVICE ACTIVITIES - 34 HOURS
27%
SUPPORTING ACTIVITIES - 28 HOURS
22%

"Progressive patient care," an example of improved utilization of resources in certain situations.

Hospital nursing practices have been changed in some countries to compensate for shortages of qualified nurses. In the new form of nursing care, known as "progressive patient care," patients are moved from one part of the hospital to another as they go through different stages of recovery. Thus, very sick patients can be concentrated in one area, and the skilled nurses they need and who are in short supply are concentrated in this area rather than distributed too thinly throughout the hospital.

This type of care particularly suits surgical patients. It exacts a price from other staff, illustrating the fundamental point that no category of staff exists in isolation. Much more time is spent on physician rounds because a physician has to visit several wards instead of, as in the past, seeing all his patients in one ward. Administration is made more complex because records have to be transferred and more frequently updated when patients are moved. To make such changes, one must find out why productive time is lost and then carefully devise new patterns of work for all the staff concerned. For example, management must institute controls to ensure that time saved is then used productively.

Productivity: complex determinants, often difficult to improve, but a major potential source of improved manpower supply.

The potential for improving staff productivity is often great, though it may be difficult to separate the determinants of observed productivity as well as to modify some of them. Factors that can affect productivity include:

- the relevance of training;
- the nature of refresher training;
- the quality of supervision;
- the clarity of job description;
- the scheduling and sequencing of tasks;
- the degree of job satisfaction; and
- availability of supplies and equipment.

Actions to increase staff productivity depend on judgement.

The effects that changes in any of these factors have on productivity cannot be measured separately, and, hence, efforts to improve productivity must depend largely on the judgement of experienced health administrators. Changes can, however, be introduced fairly rapidly, but their effects may take time.

Staff substitution to cover shortages may be possible in some cases, especially towards the periphery of the health care systems.

Other prospects for increasing the utility of staff through work reorganization include the substituting of one type of staff for another, particularly when there is abundance of an appropriate kind of staff. Doctors and public health nurses, because of their training, are probably the staff who most easily adapt to different kinds of work, but these are the very ones normally in short supply. Table 7.2 illustrates some of the manpower needed by a primary health centre and the ability of the staff to substitute for one another. Substitution is, of course, not restricted to single health-service units or programmes. Tables of substitutability should be drawn up for all categories of staff to obtain a broad view of the extent to which substitution may be used. There are some limitations and constraints to substitution:

- it is not always acceptable to professional staff groups;
- ministry personnel policies may not favour it; and
- training institutions or units may not have the capacity to provide the requisite training for staff to serve as substitutes.

Table 7.2. SUBSTITUTION OF MANPOWER REQUIRED FOR A PRIMARY HEALTH CENTRE FOR 10 000 POPULATION (PARTIAL LISTING ONLY)

Staff	Requirements	Manpower availability	Can be substituted by:	How essential is job function?	More training required for substituting staff?
Medical Officer	1	Very few	No one	Very important	-
Public Health nurse	1	Very few	Community midwife	Very important	Yes
Community midwife	2	Available	Public Health nurse/Registered nurse	Essential	No (PNH) Yes (nurse)
Registered nurse	1	Available by redeployment	Community midwife	Desirable	No
Nursing assistant	6	Few	No one	Very important	-
Dental hygienist	1	Very few	No one	Desirable	-

This substitution approach must be seen as a short-term one and can if necessary be linked to minimal staffing activities. As the table suggests, some substitutions will need to be accompanied by intensive short-term training.

WHAT SOLUTIONS EXIST TO IMPROVE SKILLS/KNOWLEDGE ?

To cover shortages in skills, 3 types of short-term training can be used: training which supplements, accelerates, or substitutes for regular training programmes.

Short-term training, the last of the action alternatives listed on page 7.2, provides an opportunity widely used to cover short-term deficits while awaiting the results of taking up long-term options. This may take the form of:

- Specialized training, in which staff of one part of a health programme is trained to serve in another (e.g. in a two-month intensive course, malaria workers are trained to become multi-purpose health workers). It supplements existing staff skills and is appropriate for semi-skilled and auxiliary health workers.

- Accelerated training through an intensive programme in which some vacation time is eliminated (e.g., compressing a three-year course into two years). It demands highly motivated students and faculty.
- "Crash training", which substitutes shorter training for the conventional training programme (e.g., a three-month course for sanitarians instead of the usual one-year training programme). It is appropriate only for auxiliary health workers where a particular needed skill can be isolated from other components of the normal training programme. The assumption of many such programmes is that staff trained so intensively will complete other parts of the training later.

WHAT ARE THE DIFFICULTIES OF IMPLEMENTING SOLUTIONS ?

During the course of exploring the problem solution options, attention has been drawn from time to time to possible difficulties in implementing these solutions. The acceptance or otherwise of possible solutions often depends on social, political and economic factors as well as purely technical considerations such as:

Solution options are dependent not only on technical considerations but also on cultural and economic factors.

- the visibility and influence of planners;
- the level of unemployment in the country;
- the status and significance of the staff concerned;
- the size and scale of the changes to be made;
- the availability of other resources; and so on.

The selection of effective solutions, both long- and short-term, has political and technical aspects in which both consumers and providers of health care must have a say.

The second step in the solution-finding process is to identify constraints, obstacles and consequences.

In a normal planning process, these factors need to be explicitly recognized. Thus the second step in the process of finding solutions to manpower problems is to identify the constraints, obstacles and consequences of the possible actions enumerated during the first step of the process. Testing the solution options in this way will immediately show, at the one extreme, options which will meet little resistance. At the other extreme will be some options which while technically feasible cannot be used in practice. For example:

Constraints are factors that cause options to be impractical.

- to increase pay may be technically feasible, but the state of the national finances precludes it. Or to direct staff to move from one place to another may be technically feasible, but no staff are willing to move. These would be constraints.

Obstacles are barriers to implementation that can be overcome.

- some recognition could be given by instituting a special grade, but this would be difficult. This is an obstacle.

Consequence is an outcome of taking up a particular option.

- if the new type of staff could be accommodated within the current structure, this would be classed as a consequence.

The constraints, obstacles and consequences should all be tested.

The constraints, obstacles, and consequences of each possible action should be listed. Making these judgements explicit facilitates both an objective review and discussion with others. Any action that involves a constraint must be dropped from further consideration because a constraint renders the action impossible. The actions proposed for inclusion in the manpower plan will be selected from the rest, taking due account of the size of any obstacles and the time and effort needed to overcome them, and any incidental benefits which may arise from the consequences.

Judgements made about constraints, obstacles, and consequences are important because they ultimately determine what will appear in the manpower plan. Mistaken judgements can mean that the best options are not selected, or, even worse, that options are promoted that should not have been considered in the first place. In this latter case, the judgement of the planner will be called into question and the whole plan may be discredited. It is important, therefore, to review carefully the more important judgements made about constraints, obstacles, and consequences before they are accepted as valid. Whenever possible, this review should be made by some of the persons likely to take part in the final decisions about the plan. At the least it should cover the judgements made about those options which (1) are expected to have the largest manpower effects and (2) involve politically sensitive choices.

Make a final review of your judgements on constraints, obstacles, and consequences, and select the most important options for further review.

HOW DO YOU ASSESS IMPORTANCE OF OBSTACLES / CONCEQUENCES ?

The last step in finding "good" solutions to manpower problems -- evaluating the obstacles and consequences of the practical actions in relation to the size of their effects -- is again a matter of the planner's judgement. At this stage, if all the preceding steps have been completed thoroughly, the planner will already have a good idea of the most likely actions. If not, he can apply some scoring method to each action separately. Alternatively, in what amounts to the same thing, an "order of merit" list can be drawn up by:

- comparing two actions to decide which is the better,
- then taking a third to compare it with each of the other two to establish its ranking relative to them,
- then taking a fourth action and repeating the comparison and ranking, and so on.

Evaluate the constraints, obstacles, and consequences as to their significance.

When, as often happens, the actions being considered have different types of obstacles and consequences and different scales of manpower effects, it is usually much easier to compare two at a time than to try to pick the best out of several at the same time. When the "order of merit" list is completed, the manpower planner is prepared to consider certain actions for implementation.

The manpower planner is now ready to consider actions for implementation.

ILLUSTRATIONS

A LONG-TERM SOLUTION: EXPANDING TRAINING INSTITUTIONS

This exercise considers a situation in which it has been decided to institute a basic health service programme (BHSP) for the first time. Each basic health unit (BHU) will serve 150 000 people and will consist of health centres and health clinics. One state in the country intends to establish 32 BHU's in its five-year plan. The requirements for key categories of manpower to staff these units are shown in Table 7.3. The large demand for community health assistants exists because they will be front-line, multi-purpose workers in health clinics. At present, there is only one school which trains them.

This table also shows the rate of annual production of these staff by existing institutions within the state. No production rate is shown if there is no appropriate training facility in the state. The fourth column in the table shows the percentage of training institutions' graduates likely to be available for the BHSP. For example, it is expected that only about one-half of the graduating nurses will be available for BHSP since there is also a high demand for them in hospitals. However, all new community midwives are expected to be available for BHSP.

Table 7.3. PROJECTED MANPOWER REQUIREMENTS

Manpower categories	Require-ments for programme	Annual production within the state	Percent of production available for BHSP	No. of years of production to fulfill 5-year demand*
Medical doctors	32	From out of state	-	-
Public health nurses	128	"	-	-
Nurses	224	75	50	6
Community midwives	224	20	100	11
Nursing assistants	384	25	75	20
Community health assistants	1280	25	100	51

*Excludes allowance for replacements of normal losses. If provision had been made for losses, the number of years required would have been substantially greater.

The size of the manpower problem is explored next.

If none of the training institutions is expanded nor new ones set up, the last column shows the approximate number of years of production needed to fill the demand for BHSP. This does not take into account any losses from the services and hence is an underestimate.

CHA supply is a major problem.

It is clear that nurses are the only category of manpower for which possibly no increase in supply is needed. The most critical category is that of community health assistants. Serious problems also exist in meeting the requirements for nursing assistants and community midwives. No estimates are given for physicians and public health nurses since further analysis would be required to determine national needs and, consequently, the state's share of the supply.

First demand/supply comparison showed large mismatch.

In this example, the first comparison of demand with supply shows that the demand cannot be met. It also provides a crude but simple method of showing the size of the inequality. The manpower planner then must return to the previous stages of the demand and supply process to see what options exist for reducing demand and increasing supply through use of both short- and long-term actions. Several cycles of investigation may be necessary before a balance is struck between demand and supply.

The focus for this exercise is critical shortage of CHA's.

The problem is complex because difficulties in meeting requirements exist for a number of interdependent types of staff. The final solution must therefore address all requirements and not just those pertaining to one type of staff. For the purposes of this exercise, attention will be directed at resolving the critical bottleneck in the programme, viz. the availability of community health assistants (CHA's).

Two-year training is required for CHA's.

The present instituion trains only 25 CHA's per year as contrasted with the need for 1280 CHA's within five years, if plan targets are to be met. CHA's are primary school graduates trained for two years with a large amount of supervised in-service training.

The possibility of increasing the capacity of training institutions to meet the plan needs is examined.

The first solution to be considered will undoubtedly be the expansion of training facilities. Since the first expanded student intake can only take place next year, any expansion of the training facilities will not take effect until the second year at the earliest. Any possible expansion will lead to no more than quadrupling the present intake to 110 students in a year or two. The 100 students who are expected to graduate, taking into account attrition, will be available only at the beginning of the fourth year of the plan (i.e., graduate at the end of the third year).

At the same time as this expansion is taking place, larger training facilities are to be established over a two-year period to start functioning at the beginning of the third year. The capacities of the proposed new establishments are such that the response to plan requirements is as follows:

Table 7.4. · TRAINING CAPACITY

	At the end of					
	Year 1	Year 2	Year 3	Year 4	Year 5	Years 1-5
Number of new community health assistants	25	25	100	600	600	1350

If we include those who graduate just prior to the beginning of year 1, the total number of CHA's available at the end of the plan will be 1375 and will meet the needs of the plan, assuming no loss from the service.

The real issue facing the planners is whether such a rapid increase (in capacity) seems desirable. As a first step in this assessment, the expected requirements of the BHS in the long-term future need to be examined.

Planners have to decide whether this is an appropriate solution to the CHA problem.

The target for the five-year plan is to establish 32 basic health units (BHU's), each covering a population of 150 000. The plan would thus provide coverage for 4.8 million people. The total population of the state is 7.5 million people, needing 50 BHU's in total to provide complete coverage. Each unit needs 40 CHA's to staff the health clinics. Thus, when there is complete coverage of the state, a total of 2000 CHA's will be needed. From Table 7.4, it is apparent that, if no CHA's leave the service, the total foreseen requirements for CHA's can be met two

The first test is to investigate the future expected rate of expansion of BHU's.

years after the end of the current five-year plan. However, some losses from the service will occur and the effects of these on the long-term targets need to be examined.

The second test is to investigate what training will be required to replace losses from the service.

Over the longer term, it is expected that 3% to 4% of the CHA's will retire annually. However, since this is a new programme and the recruits are young, normal retirement will be very low for the next twenty years. However, an attrition of 8% to 10% annually can be anticipated due to some of the staff moving away, getting married or becoming pregnant (about one-half of the CHA's are expected to be women). These losses will start almost immediately. Thus, the number of staff available in each year, using an annual attrition rate of 10% and the projected production of trained CHA's, is as follows:

Table 7.5. PROJECTED AVAILABILITY OF STAFF

	Availability of staff at the end of						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
CHA's remaining from previous year	25	47	67	160	744	1270	1743
New CHA graduates	25	25	100	600	600	600	600
TOTAL	50	72	167	760	1344	1870	2343
Minus attrition	3	5	7	16	74	127	174
Total in service at year end	47	67	160	744	1270	1743	2169

As the table shows, at the end of year 7, the presently foreseen requirements for CHA's will be reached. Thereafter, production of staff will only need to be about 200 staff a year to meet expected losses of approximately 10% a year. To meet the needs of the service, a very large expansion in the teaching programme is proposed which, after seven years, may largely be unnecessary and leave the state with a large training capacity for which there is no use.

The tests show that future training needs will not be so large as present needs.

Therefore, a rapid expansion of training capacity to meet the CHA needs will require exploration of:

- overall requirements for training capacity in the future, and
- the feasibility of adapting CHA training facilities to other uses.

If the new training facilities cannot be used for training other categories of manpower after having fulfilled the requirements for BHS and if the government feels that it will be undesirable and expensive to close the institutions, the planner will have to examine other options involving a mixture of long- and short-term solutions. For example, a more limited expansion of training facilities may be combined with crash training programmes.

The planner may need a compromise solution, i.e., mixing long- and short-term solution options if no further use of the facilities is visualized.

A SHORT-TERM SOLUTION: CRASH TRAINING PROGRAMME

This exercise examines whether a crash training programme can provide enough sanitarians with skills in water supply and sanitation to meet the needs of a big new programme for rural water and sanitation.

Problem statement: meet short-term needs for sanitarians and integrate them in the service without distorting long-term development plan.

The target for the water supply and sanitation programme requires 2100 sanitarians within two years and approximately 2400 sanitarians by the end of the five-year plan period, i.e., by 1983.

Current production is not sufficient to meet requirements.

The current situation is as follows:

- the one-year sanitarian training programme has been running for two years;
- the training academy's present capacity is to graduate 300 students per year and to increase its output by 20 students a year, starting this year;
- losses in training and from service are considered negligible for the sake of simplicity in the illustration.

The expected number of sanitarians will be:

Graduated in	1979	300
Expected in	1980	300
	1981	320
	1982	340
	1983	360
Total:		1620

The required number by 1981 is 2100 and at the end of 1983 is 2400. Therefore, the

shortage in 1981 = 2100-920 = 1180,
shortage in 1983 = 2400-1620 = 780.

There are constraints which limit the planner's options.

The constraints are that no spare trainers are available and the academy cannot be much expanded. However, it is considered possible to impart the basic concepts in water supply and sanitation through three-month training courses. It will take about a year to make the arrangements to set up additional training programmes.

The solution proposed is to take up a crash training programme.

The following solutions are proposed:

- Take regular sanitarians from service and train them in a crash training programme (one trainer for each ten students). They will return to service at the end of the crash training programmes.
- Use provincial training centres rather than the

academy for training; the capacity at these centres will allow for training approximately 300 students at a time.

- Produce 2100 regularly and minimally trained sanitarians by the end of 1981 and use the following years to re-train at the academy all minimally trained graduates to become regular sanitarians.

- Train training staff during 1980 and start the first three-month training programme in the last quarter of 1980.

With the limit of 300 crash programme graduates being trained at a time, a series of four crash programmes is proposed.

Thus, at the end of 1981, there will be:

920 regular sanitarians
plus 1200 crash programme graduates
(4 x 300)
Total: 2120, thus meeting the target.

The requirement for 1983 is for 2400 sanitarians by the end of the year.

The solution needs to be tested to see if the long-term needs can also be satisfied.

There are 1200 crash training programme graduates to be re-trained. A training period of ten months will be needed to bring them to the required standard. If re-training were to start in 1983, the regularly trained sanitarians would number 1260 (i.e., trained up to 1982). With those minimally trained, the total number would be 2460, of which 360 would be re-trained in 1983. Thus, there is an approximate equilibrium between supply and requirements.

Although the quantitative picture seems simple, some other issues arise:

Other issues also arise from the proposed solution which need alteration before the solution can be accepted.

- what status and pay would be given to the minimally trained staff until they are retrained?

- what service credit should be given for the time they served as only partially qualified staff?

- what funds would be available to pay the increased costs of training since staff, while being re-trained, are paid as full-time staff?

- how many of the sanitarians would be needed at the end of the five-year period to compensate for attrition?

- what should be the size of the training academy in order to avoid over-production of sanitarians?

BACKGROUND READING

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3. Baker, T.D. Health manpower planning. In: Reinke, W.A., ed. Health planning: qualitative aspects and quantitative techniques. Baltimore, Maryland, U.S.A., Johns Hopkins Press, 1972 (pp. 179-198).

4. Gish, O. Planning the health sector: the Tanzanian experience. London, Croom Helm, 1975 (Chapter 4, pp. 67-98).

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EXERCISES

EXERCISE 1. Selecting Solutions to Manpower Problems

1. Select a category of health manpower which could give rise to serious difficulties in the next health plan. If possible, select a staff category that has already been covered in Sessions 4, 5 and 6.

2. List the options you feel might remedy the problem(s) and specify how you think these changes might be brought about. For example, what policies or actions would increase the recruitment rate of trained staff, or reduce their leaving rate, or encourage newly qualified staff to take up posts in rural areas, and so on?

3. In selecting certain options in 2 above to solve or alleviate the problem and in suggesting the policies or actions which might bring about these changes, you will already have taken some account of what, in your judgement, is practical in the circumstances and what is not. The accuracy of these judgements is critical to the success of a manpower planning exercise, because if it is inaccurate, the plan will be rejected as unrealistic (or even naive), the potential benefits of a manpower plan will have been lost, and time and effort will have been wasted. Because they are so important, these judgements must be made explicit so that they can be reviewed and checked by appropriate authorities.

   Select one of the major actions you have suggested. What, in your view, are the obstacles to its implementation? What important consequences might it have which should be reviewed by senior health decision-makers?

4. Select one of the possible actions you rejected. What constraint(s) led you to reject it? In your view, which types of constraint should be submitted for review and confirmation by higher authorities, in case they are not actually constraints, but can be considered instead as obstacles?

EXERCISE 2. Comparing Short-Term Solutions

In the illustrative example concerning the short-term needs for a larger number of sanitarians, it was pointed out that the crash programme approach would incur additional financial costs. It is assumed that the additional costs are due to the practice of giving minimally trained staff the full pay for a sanitarian while going through re-training.

Usually new students in the academy of sanitarians receive one-third of the salary of a qualified sanitarian during the regular one-year training.

1. Using the numbers from the illustrative example, determine:
    a. the salary costs of regular sanitarians and sanitarians in training over the five-year period; and
    b. compare the results of these calculations with the costs that might be involved if, instead of a crash training approach, outside contractor firms were employed to make up any deficiencies in the staff needed for the short-term targets.

The cost information concerning salaries is as follows:

- a regular sanitarian is paid 1000 units per year;

- sanitarians in training and crash programme trainees are paid at the rate of 330 units per year;
- crash programme staff, while working and while in their re-training programme to become regular sanitarians, are paid at the rate of 1000 units per year;
- outside contractors receive, for each sanitarian they provide, a fee for service equivalent to a rate of pay of 2000 units per year.

2. Using the costs involved and any other criteria that you might feel are relevant, prepare arguments for adopting either the crash training programme solution or the short-term solution of the use of external contractors.

EXERCISE 3. Solving Problems of Coordination

There is always some coordination problem between training institutions and service units. The nature of the problem varies but quite often it involves two principal issues:

- the knowledge and skills of the new graduates are not seen to be relevant to the needs of the service; and
- the number of graduates is out of step (either too many or too few) with service requirements.

These problems occur despite the fact that in most training institutions service staff are represented on the faculty boards and are able to exercise some influence on the direction and activities of the training institute.

1. In order to improve the coordination and ensure that training institutions produce

graduates more closely related to the needs of the service:

- suggest appropriate measures to improve the coordination between service units and training institutions on a continuing basis;
- list the major constraints, obstacles, and consequences of such measures.

EVALUATION QUESTIONNAIRE FOR SESSION 7

Date________________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

	Not at all	Poorly	Fair	Well	Very well
1. List alternate long- and short-term solutions to manpower problems.	☐	☐	☐	☐	☐
2. Analyze the implications of these solutions.	☐	☐	☐	☐	☐
3. Identify limitations, constraints, and consequences of these solutions.	☐	☐	☐	☐	☐
4. Select long-term solutions to meet typical manpower problems.	☐	☐	☐	☐	☐
5. Select short-term solutions that fit with long-term policies and plans.	☐	☐	☐	☐	☐

	Not at all	A little	A fair amount	Most of it	All of it
2. Did you read any of the learning material before the session?	☐	☐	☐	☐	☐

3. Was the learning material:	Not at all	Somewhat	Fair	Moderately	Very
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

4. Did you find the illustrations:

	Not at all	Somewhat	Fair	Moderately	Very
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐

5. Did you find the exercises:

a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated

	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:

	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

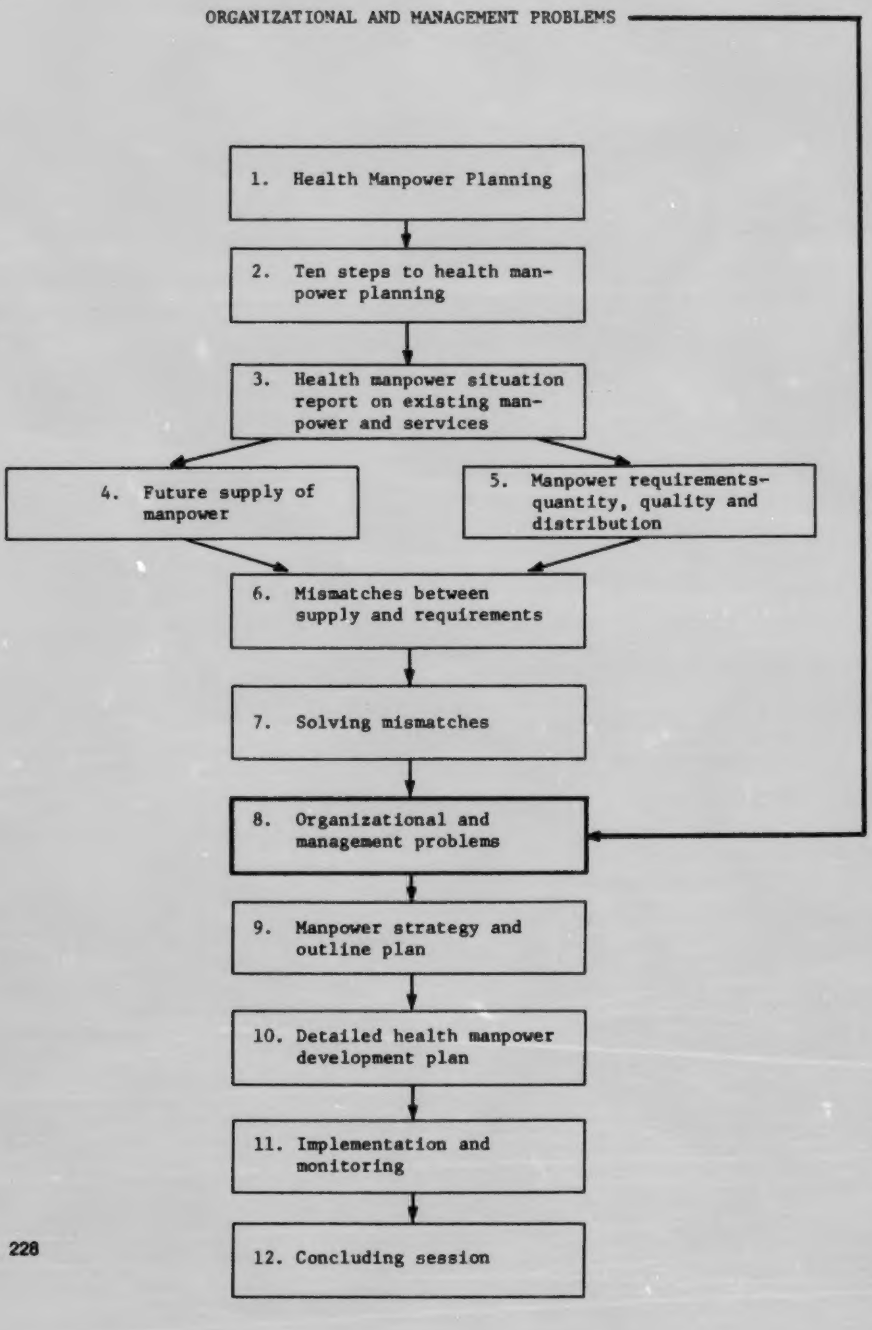
8. Do you have any other comments?

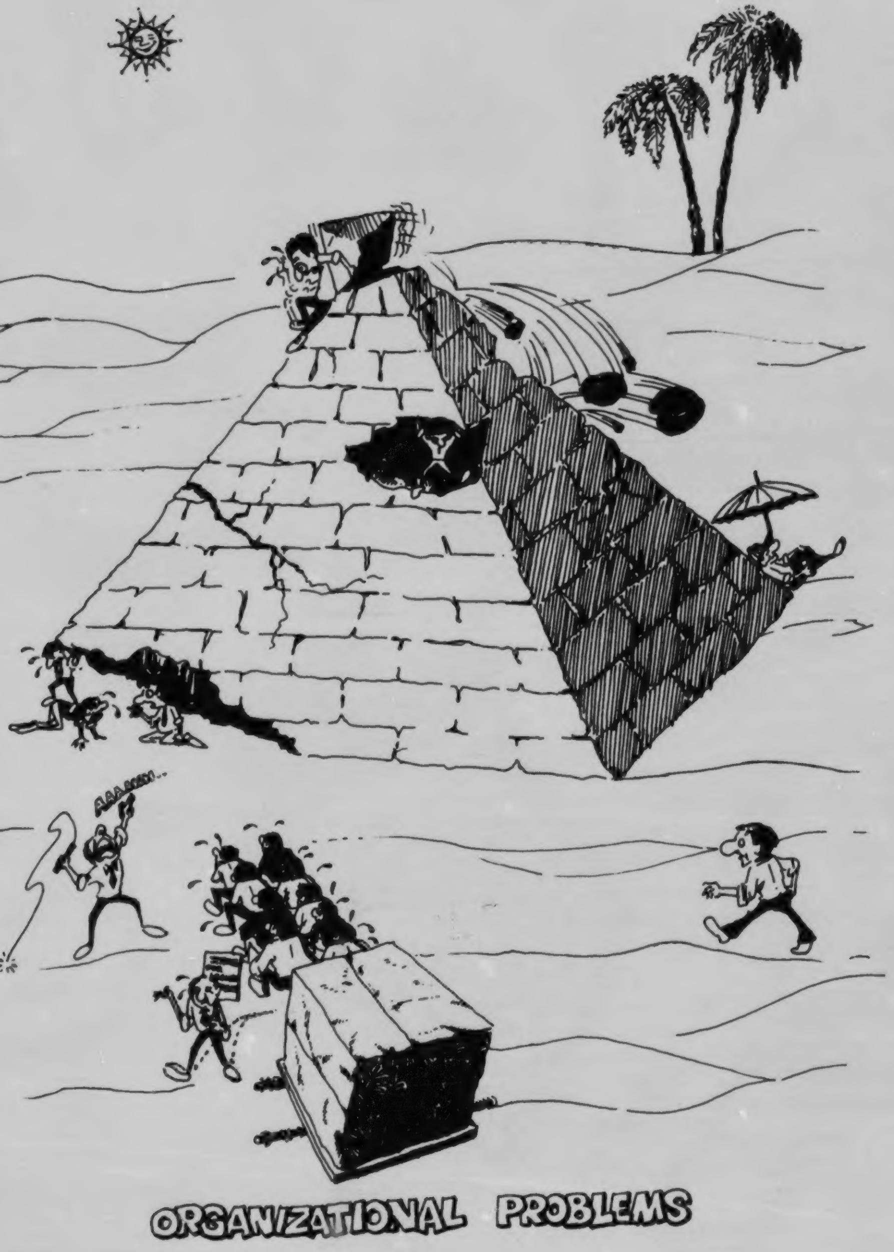
Name______________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION 8

ORGANIZATIONAL AND MANAGEMENT PROBLEMS


ORGANIZATIONAL AND MANAGEMENT PROBLEMS
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session



ORGANIZATIONAL PROBLEMS

SUMMARY

This session is concerned with the identification and solution of problems associated with the organization and management of health manpower development programmes.

Experience shows that health manpower development and health services pursue independent paths, each paying little attention to the other. If training is to be pertinent to the service, a priority need is for health manpower producers and consumers to coordinate their efforts.

Training is hindered by lack of a proper understanding of the tasks to be performed and of proper job descriptions for different health workers. Curricula are generally not competency-oriented, and hence are concerned with the accrual of knowledge rather than with attitudes and skills.

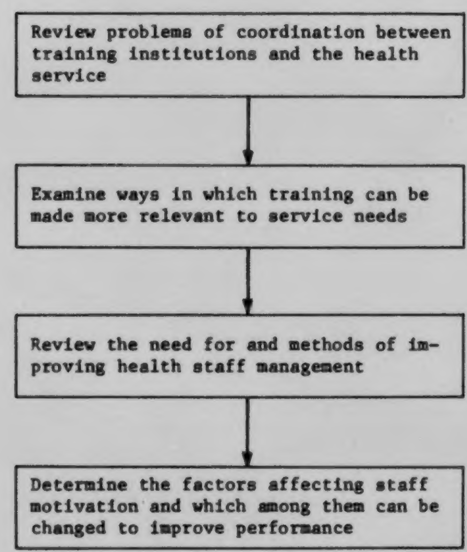
Health personnel management has many shortcomings such as lack of proper supervision, lack of incentives, no clear pathways for career development, and so on. The outcome is a low morale and a lack of motivation among health personnel. The planner should ensure that adequate attention is given to these aspects of personnel management, and propose suitable personnel policies and career development programmes. Continuing education should be promoted as a means of maintaining and upgrading skills, and supporting career development.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Specify at least three organizational and management problems with long-term implications.
2. List alternative policies to solve these problems.
3. Outline the possible constraints, obstacles and consequences for each of these policies.
4. Select policies to cope with management and organizational problems which best suit current national circumstances.

SESSION STRUCTURE



Review problems of coordination between training institutions and the health service

Examine ways in which training can be made more relevant to service needs

Review the need for and methods of improving health staff management

Determine the factors affecting staff motivation and which among them can be changed to improve performance

LEARNING MATERIAL

WHAT OTHER MANPOWER PROBLEMS NEED TO BE RESOLVED ?

Session 6 dealt with the identification of supply/requirement mismatches. Mismatches were classified under five broad headings: quantity, distributions, skills, work organization and productivity, and duration. Session 7 explored possible solutions to these mismatches. However, these solutions, unless carefully screened, can themselves create a different type of problem associated with the organization and management of manpower which can have long-term consequences.

Solutions can create their own problems.

Solutions emerging from a particular health manpower planning effort will vary with the circumstances of countries. Thus, a good way to improve the distribution of manpower for rural needs in one country may not suit another. "Barefoot doctors" suit China but may not be a good solution elsewhere. What people will accept as solutions depends primarily on a country's social and political systems. However, although solutions may vary, certain problems of an organizational or managerial type are common to many countries, and some of these are explored in this Session.

Problems of an organizational and managerial kind are common to many countries.

HOW CAN TRAINER/USER COORDINATION BE CHANGED ?

A major problem for the education and training system for health manpower and for the health care services is that of coordination and communication between the two sectors. Educational institutions often pay little attention to the needs of the health services or are not informed what these needs are. Curricula are modelled on those of other countries and often do not serve well the needs of the people. At the same time, the health services try to cope with immense health problems with whatever trained staff they

Lack of coordination between health services and training institutions is a basic problem.

can obtain. The relative independence of the two sectors leads to such problems as lack of relevance in training and numerical imbalances between the type of staff needed and the type supplied.

Training often follows an independent path producing staff with skills irrelevant to needs.

Often health personnel are not educated for their future tasks in the health services, especially for meeting community needs. In many developing countries, educational institutions base their programmes on those of developed countries. High-technology services are emphasized instead of simple effective technology; and curative services take precedence over preventive. This applies to the education not only of physicians but also of other categories of health personnel, e.g.,.nurses are trained primarily in hospitals rather than in communities.

Mechanisms for coordinated health services and manpower development (HSMD) are a fundamental necessity for an effective service.

How to solve this lack of coordination between health services and the education system depends on the circumstances of a given country. In some countries, for example, national health councils which include top health and education administrators may be appointed to oversee a coordinated growth of health services and manpower. In other countries, training institutions may be made responsible for the health care of certain communities. The dean of a medical school may be made also director of health services of the district or region in which the school is located. In other countries, there may be informal arrangements for a regular exchange of opinion and experience between service staff and educators. Task forces and steering committees may include representatives of different sectors.

The concept of integrating "health service and manpower development" (HSMD) is of fundamental importance to ensuring effective communication between the two sectors of health and education, as well as joint participation in the planning and development of manpower and health services. This is difficult to establish and depends on a change in the attitudes of those concerned. Attitudes must be changed if HSMD is to be realized.

HOW CAN THE RELEVANCE OF TRAINING BE IMPROVED ?

Training is often inappropriate for tasks to be performed.

Inappropriate staff skills and attitudes is another manpower development problem. In many countries health workers are either over-trained or under-trained for the tasks they perform. This not only affects the quality of their service but also leads to staff dissatisfaction. Thus, a doctor trained for hospital-based surgery may well not feel motivated for work in a rural health centre if all he sees are what he considers minor ailments.

Task analysis provides guidance for training needs.

Relating training to service conditions and tasks can be achieved partly by the HSMD mechanism. However, other steps also need to be taken such as identifying health workers' tasks and functions and planning curricula around them.

Task analysis can be translated into job descriptions which provide purpose to staff activities.

In many countries, different categories of health workers lack proper job descriptions. This is often made worse when there are too many health worker categories, distinguished from one another by only minor variations in their training. An important task for a manpower planner would be to prepare a set of job descriptions in conjunction with health service staff.

Jobs and tasks do not remain static; job descriptions and training need to be updated regularly.

Job descriptions are not static; they should be changed as experiences and circumstances dictate. They must be kept under continuous review on the basis of observed functions of health workers and what they perceive their jobs to be. Job descriptions should clearly specify the tasks and functions of health workers; they should not be expressed only in generalities.

Competency-based curricula arise from an understanding of the tasks to be performed.

Job descriptions play a critical role in curriculum revision. It is up to the educational planners to design curricula which give trainees the requisite skills and knowledge. This Session does not go into educational planning as such. What is stressed is the need to develop competency-based curricula that would enable trainees to perform their tasks better. The structural relations between health services and the education system through which this type of curricula can develop are shown in Figure 8.1.

Practical field experience during training often needs to be strengthened.

In many educational programmes, training is oriented mainly toward theory; and field work receives little attention. This leads to a dissonance between training and service functions. On assuming duties, trainees feel disoriented when they are faced with the practical tasks expected of them. During training, sufficient attention must be paid to these tasks and to the conditions in which trainees will have to carry them out.

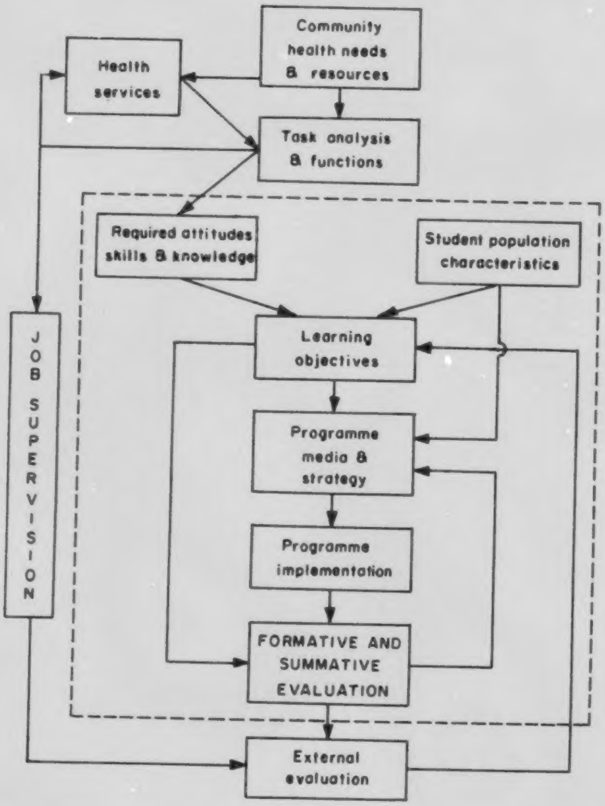
Interspersing field work with theory training may be an appropriate way of providing practical experience.

To have a proper mix of theoretical and field work, and to enable students to learn by doing, field work should be interspersed with periods of theoretical training. For example, a nurse would have to work in rural communities as a student nurse for extended periods during her studies. Such proposals are often opposed by various bodies, especially professional bodies, and much effort is needed if decision-makers are to accept the changes of policy involved.

Admission policies may have to be changed to improve community orientation of students.

Admission policies may also cause problems. Student admissions, especially to professional schools, may depend almost entirely on prior academic performance, to the neglect of many other factors. The emphasis usually placed on academic performance tends to bias selection toward students from urban and more affluent backgrounds, resulting in graduates who are very reluctant to serve in rural areas. Attempts to change admission policies will encounter opposition from many quarters. However, the planner should explore with educational authorities how applicants with more suitable attitudes and backgrounds can be recruited and, if necessary, given some preference in the admissions process. Such applicants are more likely to see their training in terms of rural needs and are in general more willing to serve in rural areas after training.

Figure 8.1. RELATIONSHIP BETWEEN THE EDUCATIONAL AND HEALTH SERVICE SYSTEMS*


Community health needs & resources
Health services
Task analysis & functions
Required attitudes, skills & knowledge
Student population characteristics
JOB SUPERVISION
Learning objectives
Programme media & strategy
Programme implementation
FORMATIVE AND SUMMATIVE EVALUATION
External evaluation

Note: Educational "system" is that shown within the dotted lines.

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[*] Based on diagram in Guilbert (see References at end of Session).

8.6

HOW CAN STAFF MANAGEMENT BE IMPROVED ?

Staff performance problems are often the result of poor management.

Good management is essential if the different elements of the health care and health manpower systems are to function well together. However, the health sector often lacks management skills, and this results in wasted resources. Examples of management problems are:

- lack of proper supervision;
- lack of incentives;
- inability of health workers to communicate well with patients and communities;
- inability of health personnel to work as teams, and so on.

Each of these problems has a set of causes and the manpower planner must devote some attention to solving them. Solutions can involve such measures as strengthening the management infrastructure and imparting selective management skills to health personnel by training. Improvements, initially at least, will be slow-acting and service managements must see this as a long-term investment.

Management capability can be improved and extended by training.

The health manpower planning working group may identify management problems that affect health care, and then select for action those that may be solved by a well-designed training system. Once established, training in management, if it is systematic and properly organized, can go far in solving these problems as they arise. Ultimately, the health service management should be oriented to problem-solving as a basis for good management and to strengthening the problem-solving skills of health staff at all levels of the service.

WHAT CAN BE DONE ABOUT STAFF MOTIVATION ?

A major problem in many countries is the lack of career prospects for many health personnel whose advancement is blocked and who become sufficiently discouraged to effectively withhold their labour. Although they continue in their posts, their performance becomes perfunctory and their motivation so low that their contribution to the health services is minimal. Other incentives to staff motivation besides career development are also often lacking. These include:

Lack of career development and adequate incentives reduces staff motivation.

- monetary factors (salaries and fringe benefits), opportunities for private practice, etc.:
- intellectual satisfaction;
- rotation and advancement;
- equality of opportunity;
- working conditions and job security;
- facilities, supplies and equipment: and
- prestige.

Many of these motivating factors can be influenced by changes in personnel policies. Thus monetary rewards can sometimes be increased even within a country's civil service regulations by introducing projects in which participation would bring some extra remuneration. The rotation, advancement, working conditions and job security of staff are controlled directly by personnel policies. Intellectual satisfaction or prestige, on the other hand, can be only marginally affected by changes in policies.

Many of these motivating factors can be influenced by changes in personnel policies.

Personnel policies can be directed also at increasing the willingness of staff to serve in rural areas and other areas with difficult working conditions. The posting of staff to such areas could be made easier by improving their pay or by a policy of comparatively rapid promotion. Also, compulsory rotation of personnel among difficult and attractive areas of a country could be introduced. This could succeed only if the policy is followed strictly, with few if any exceptions.

Changing personnel policies can be difficult because they often impinge on other sectors.

Some of the solutions, particularly the short-term ones, explored in Session 7 may themselves create new problems in providing adequate incentives to health staff. For example, the rapid expansion of training institutions to supply sanitarians for a fast-growing water supply and sanitation programme may lead, after a few years, to many being stuck in their grades because more senior posts are blocked. Problems of career development are often not easy to solve since the possibility of change may depend on factors outside the control of the health sector. Civil service policies govern how people are recruited and promoted, and usually apply throughout the public sector, thus making it difficult for one segment of the public sector such as health to make changes separately from the other segments.

"Cohort analysis" can be used to examine consequences of changing personnel policies.

One way to examine the possible implications of certain HMD strategies on the distribution of staff by grades at some time in the future is "cohort analysis." The composition of a cohort group of staff is projected into the future to discover what its composition will be at certain points in time. It will be depleted by some staff leaving, and by some staff being promoted to higher grades. New recruits usually go to the lowest grade. The cohort method can be used, therefore, to examine the implications of alternative recruitment and promotion policies. An example of cohort analysis is given in the Illustration at the end of this Session.

Accreditation policies can provide an alternate path to career advancement.

Some of the bottlenecks in career development and advancement lie in the nature of educational qualifications demanded of different categories of staff. In many countries the recruitment of staff in certain grades is restricted to university graduates. Staff in lower categories who may have given years of dedicated service cannot be promoted for lack of a university degree. Most of them cannot obtain university degrees so late in their careers since admission to universities is also restricted. Thus some civil service requirements may have a depressing effect on staff morale. This can be resolved either by changing such policies or by introducing a new system of training and accreditation which allows for the possibility of advancement through experience and performance.

HOW CAN CONTINUING EDUCATION CONTRIBUTE TO MOTIVATION ?

Continuing education provides a strong stimulus to staff motivation.

As already stated, career development must be tied in with continuing education, i.e., training -- in-service or out-of-service -- to maintain and upgrade skills of staff. The potential role of continuing education in encouraging career mobility and improving staff morale is often ignored. Continuing education may take the form of refresher courses, workshops or seminars, or other kinds of in-service training.

At its simplest level, continuing education can be tied in with the supervision of health workers. For example, in China "barefoot doctors" are supervised by health centre medical staff who visit the villages periodically. During these visits they may train the "barefoot doctors" if they are found to lack certain necessary skills. In a similar way, when "barefoot doctors" have to visit the health centres, they usually receive brief training on some aspects of their work. When there are rigid educational barriers to promotion or vertical mobility, continuing education in this style may be used either to gradually fulfill the minimum educational requirements or simply provide staff with the intellectual satisfaction of improving their skills.

Continuing education can be used to qualify staff for further promotions or simply to improve skills.

Staff training should include on-the-job training as well as institutional training.

Continuing education is usually considered as training to improve competence and is distinguished from postgraduate education or any education that leads to a qualifying diploma or licence. Obviously, a health personnel education system should provide also for postgraduate education and other forms of institutional training which lead not only to improved competence but also directly to improved career prospects.

A plan for developing health staff must provide for career mobility as well as needed skills and knowledge.

In view of these various requirements, educational planners, in seeking to establish an educational system which meets the needs of the health service, must identify not only the knowledge and skills required of staff now and in the future but also the training required to provide appropriate career mobility. Only then can suitable curricula be designed and an implementation plan developed which copes with the constraints and obstacles that impede the application of different training schemes. It may be impossible, for example, to take away a staff member from his post for three months or a year, and a course would then have to be designed on the basis of frequent sessions near the place of work.

Staff motivation is critical to performance; attitudes of decision-makers need to change if staff motivation is to change.

Problems of attitude and motivation are the most difficult, but also are among the most important in determining staff performance. Numerous ways are open to decision-makers to influence the attitudes of staff. However, in many situations, these are neglected in favour of simply increasing staff numbers. It is only by significant changes in the attitudes of decision-makers themselves that problems of staff attitude and motivation will be solved.

ILLUSTRATION

COHORT ANALYSIS OF THE DISTRIBUTION OF STAFF IN GRADE

In one developing country, the government has decided to expand rapidly its rural water supply and sanitation programme. So far, the rural population has had almost no drinking water supply. The programme is therefore starting from a very limited base and is aiming at complete coverage of the population as rapidly as possible.

Rural water supply and sanitation programme is to be expanded.

The principal category of technical manpower to be used in this government programme is that of sanitarians. Sanitarians take a one-year course, learning how to sink tube-wells and maintain them, as well as other aspects of hygiene and sanitation, e.g., the construction of latrines and food inspection. Because of the expanded programme of rural water supply, the government has decided to expand the capacity of the three existing sanitarian schools so that they each produce 100 sanitarians a year from 1981, and at the same time to establish a fourth school in 1981 which will also produce 100 sanitarians each year. Following this, six more schools are to be established in 1984, again each to produce 100 sanitarians a year. Thus, the annual production of sanitarians will be 400 from 1981 to 1984 and 1000 from 1985 onward.

The problem is concerned with a rapid expansion of sanitarian staff.

Since all government staff are paid by the Ministry of Finance, the total number of staff in each grade must be approved by both the Civil Service Commission and the Ministry of Finance. The first column in Table 8.1 shows the present distribution of sanitarians by grade and years of service in the grade.

The current grade distribution of staff is shown in Table 8.1.

There are four employment categories for sanitarians -- marked Grades I to IV, in ascending order. These categories are determined by the Civil Service Commission for all government staff, and any changes must be approved by the Commission and the Cabinet. To be promoted to a higher grade not only must there be a vacancy but the staff member must also have spent at least four years in his present grade. Each grade has three possible annual increments, so that a staff member reaches the top salary of the grade at the beginning of his fourth year of service in that grade.

Regulations exist to cover career advancement of staff.

8.12

Special policies have been adopted to encourage entry and retention of staff as sanitarians.

Owing to the small number of sanitarians in service, the Ministry of Health has so far obtained the necessary approval to adopt a policy of promoting sanitarians from one grade to the next after four years of service. Thus, sanitarians expect to be promoted every four years.

If this policy is followed, Table 8.1 shows how the sanitarians will be distributed by grade and years of service in the grade. Since it is a new programme and all the graduates are young, future losses are minimal and have been ignored. However, this introduces an error since some attrition is to be expected.

Table 8.1. NUMBER OF SANITARIANS BY GRADE AND NUMBER OF YEARS IN GRADE: COHORT ANALYSIS

Grade	Years in Grade	1980	1981	1982	1988	1989	1990	1991
I	1	90	400	400	1000	1000	1000	1000
	2	69	90	400	1000	1000	1000	1000
	3	55	69	90	1000	1000	1000	1000
	4	43	55	69	1000	1000	1000	1000
Total		257	614	959	4000	4000	4000	4000
II	1	33	43	55	400	1000	1000	1000
	2	27	33	43	400	400	1000	1000
	3	22	27	33	400	400	400	1000
	4	18	22	27	400	400	400	400
Total		100	125	158	1600	2200	2800	3400
III	1	14	18	22	90	400	400	400
	2	11	14	18	69	90	400	400
	3	8	11	14	55	69	90	400
	4	6	8	11	43	55	69	90
Total		39	51	65	257	614	959	1290
IV	1	4	6	8	33	43	55	69
	2	3	4	6	27	33	43	55
	3	2	3	4	22	27	33	43
	4	1	2	3	18	22	27	33
	4	-	1	3	50	68	90	117
Total		10	16	24	150	193	248	317

Table 8.2 summarizes the effects of the present personnel policies in terms of the total distribution of sanitarians by grade and the relative percentages. It can be seen that the effect of expanding training institutions will be felt only after some years. For example, the percentage of sanitarians in Grade II drops from 25% in 1980 to 13% in 1982, and rises to 38% in 1991. The full effect on Grades III and IV will not be felt until 1996 or later. Nevertheless, what is apparent from the table is that the following current promotion policies will lead to a redistribution in percentage terms of staff in higher grades, leading to higher salary cost for the same type of services as are currently being provided.

Application of the policy will lead to a change in staff grade distribution and increased costs for sanitarian services.

Table 8.2. FUTURE DISTRIBUTION OF SANITARIANS BY RANK

Grade	Number and Percentage of Staff in Grade by Year						
	1980	1981	1982	1988	1989	1990	1991
I	257 63%	614 76%	659 80%	4000 67%	4000 57%	4000 50%	4000 44%
II	100 25%	125 16%	158 13%	1600 27%	2200 33%	2800 35%	3400 38%
III	39 10%	51 6%	65 5%	257 4%	614 9%	959 12%	1290 14%
IV	10 3%	16 2%	24 2%	150 3%	193 3%	248 3%	317 4%
Total	406	806	1206	6006	7006	8006	9006

Note: Owing to rounding errors, the column percentages may not total 100.

REFERENCES

1. Guilbert, J.J. Educational handbook for health personnel. Geneva, World Health Organization, 1977 (WHO Offset Publication No. 35, 621 pp.)

2. Schaeffer, M. Management training for health development. Geneva, World Health Organization, 1979 (Offset Report HMD/EBWG/79.6).

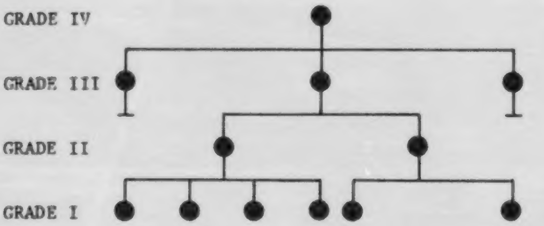
3. World Health Organization. Continuing education of health personnel: report of a Working Group. Copenhagen, WHO Regional Office for Europe, 1977.

4. World Health Organization. Continuing education of health personnel as a factor of career development: report of a Working Group. Copenhagen, WHO Regional Office for Europe, 1979.

EXERCISE

EXERCISE 1. Assessing the Impact of Promotion Policies on Career Progression

Refer to the Illustration on page 8.10. The Ministry of Finance has approved the funding of the expanding supply of sanitarians. However, since the grades denote progressive supervisory positions, the Civil Service Commission has its own rules as to the proportion of total staff who can be in each grade. Their present rule is that no more than 20% of total posts can be in Grade II, 10% in Grade III and 3% in Grade IV. This is based on the structure of supervision as depicted below.



The Commission has indicated to the Ministry that they intend to enforce this rule for sanitarians as well as others.

It is clear from Table 8.2 that by seniority the present policy of promotion will cause no problems in the next few years. By 1987 however (in fact by 1985 although this is not shown) not all eligible sanitarians can be promoted to Grade II. The same applies to Grade III after 1989. It is anticipated that unless personnel policies are changed soon, there will be considerable dissatisfaction when staff find they are stuck at the top of their grade, contrary to their expectations.

1. What alternative promotion policy would you recommend for the distribution of these staff by grade over the next fifteen years? Describe its implications.

2. List the advantages and disadvantages of your proposed policy as compared to the existing policy. From which sources would you expect support for, and opposition to, your policies?

EXERCISE 2. Providing Career Opportunities Through Continuing Education

For the category of staff you have been considering in Sessions 6, 7 and 8, is there any obstacle to vertical mobility due to educational requirements? (For example, a community health assistant cannot be promoted above a certain level since a university degree is needed for higher levels.) What steps can be taken, through selective continuing post-basic or postgraduate education, to overcome the barriers for those with sufficient motivation? Outline what you would do to institute such a system.

EVALUATION QUESTIONNAIRE FOR SESSION 8

Date ______________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

   1. Specify at least 3 organizational and management problems with long-term implications.
   2. List alternative policies to solve these problems.
   3. Outline possible constraints, obstacles and consequences for each policy.
   4. Select policies to cope with organizational and management problems best suited to national circumstances.

	Not at all	Poorly	Fair	Well	Very well
1.	☐	☐	☐	☐	☐
2.	☐	☐	☐	☐	☐
3.	☐	☐	☐	☐	☐
4.	☐	☐	☐	☐	☐

2. Did you read any of the learning material before the session?

Not at all	A little	A fair amount	Most of it	All of it
☐	☐	☐	☐	☐

3. Was the learning material:

   a. useful for doing the group work exercises?

   b. easy to understand?

   c. interesting?

	Not at all	Somewhat	Fair	Moderately	Very
a.	☐	☐	☐	☐	☐
b.	☐	☐	☐	☐	☐
c.	☐	☐	☐	☐	☐

4. Did you find the illustrations:	Not at all	Somewhat	Fair	Moderately	Very
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐

5. Did you find the exercises:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

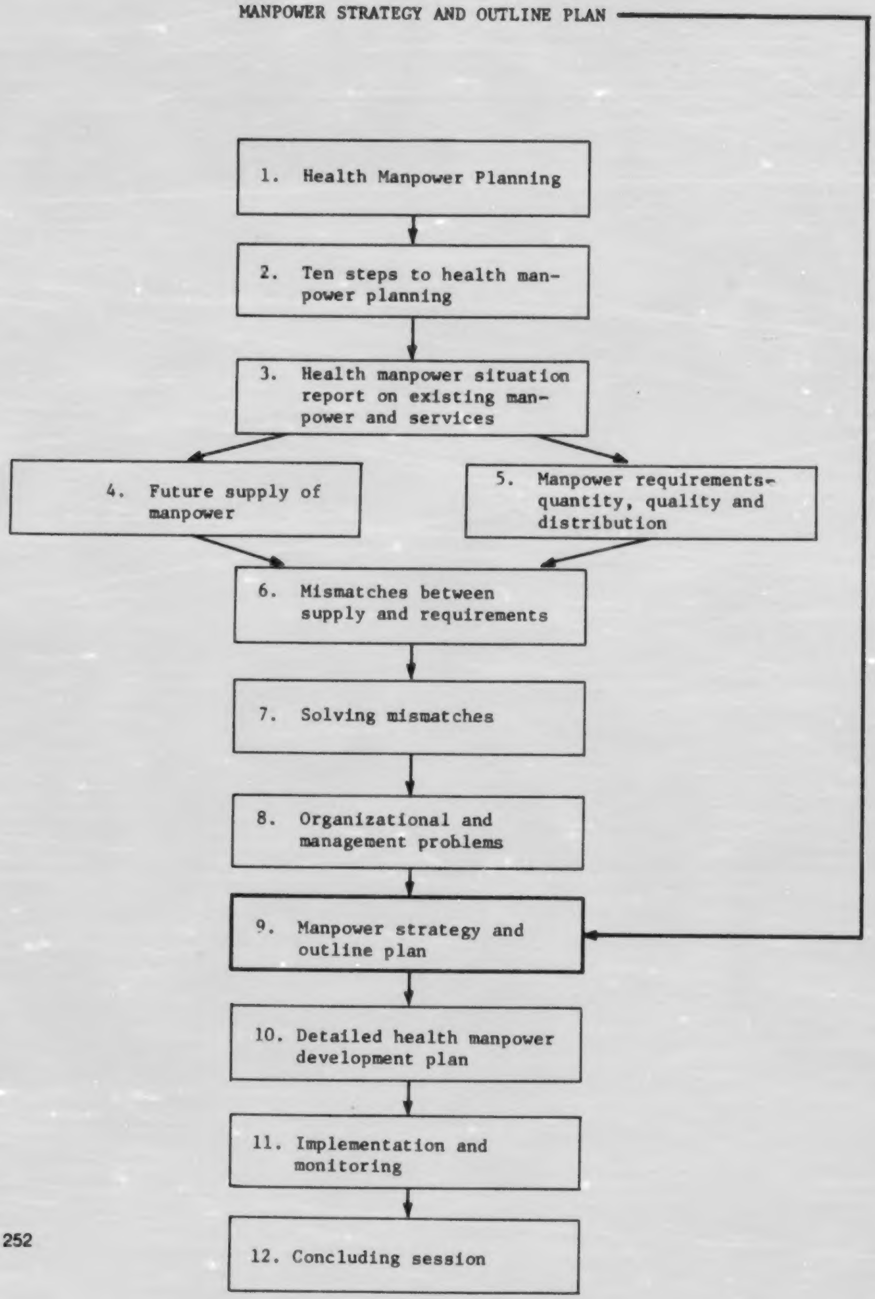
8. Do you have any other comments?

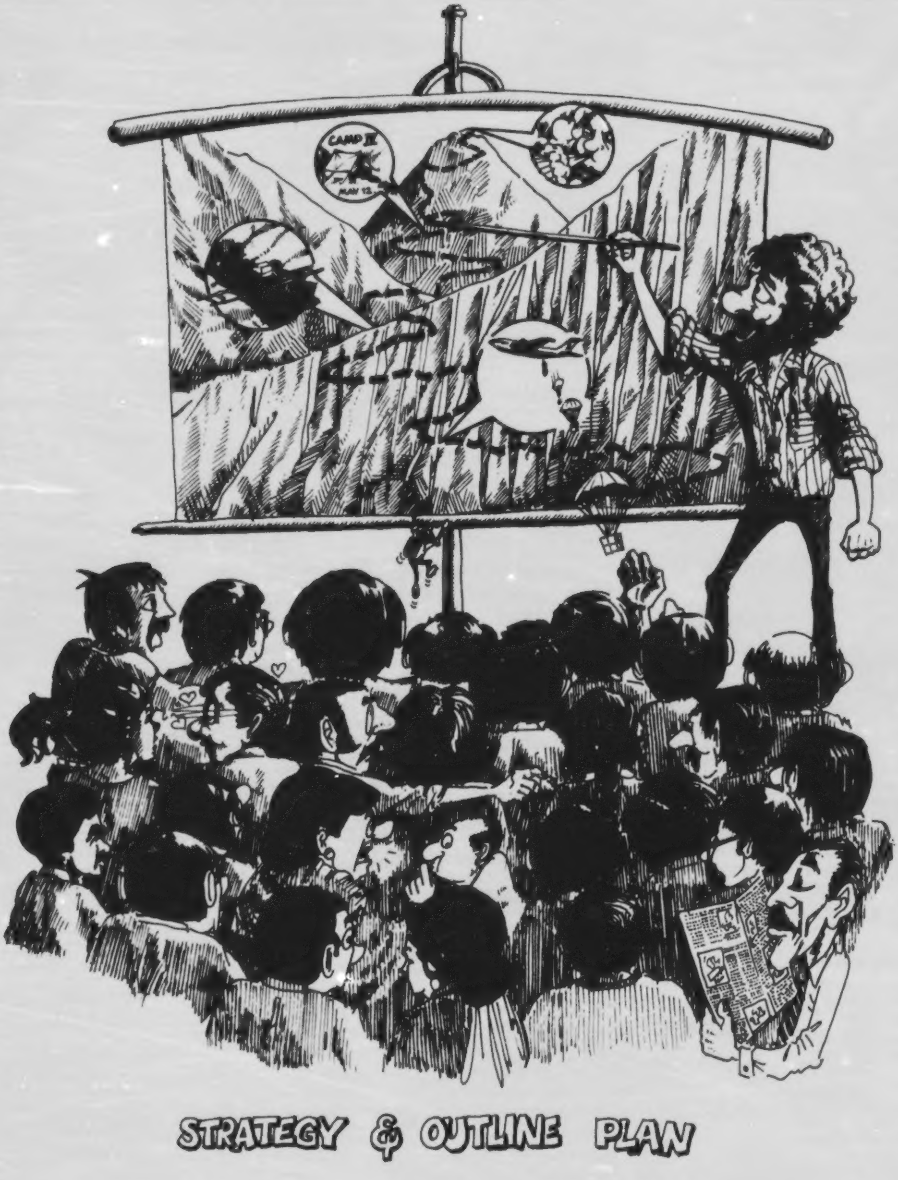
Name________________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION 9

MANPOWER STRATEGY
AND
OUTLINE PLAN


MANPOWER STRATEGY AND OUTLINE PLAN
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session


CAMP IV
MAY 12

STRATEGY & OUTLINE PLAN

SUMMARY

The previous sessions have been concerned with identifying the main manpower needs in a health plan and investigating different actions which might be taken to satisfy them. This session represents the culmination of that work, when particular sets of actions are selected for implementation.

There are two major difficulties to be overcome in this process. First, it takes a great deal of judgement to assess the likely effects of many of the proposed actions and, more significant, their importance. For example, it may be necessary to decide between not meeting staffing targets or exceeding the budget, or between meeting the staffing target either for one group or for another, but not for both, and so on.

The second major difficulty lies in selecting "good" sets of actions from a longer list when:

a) different actions have contrary effects;

b) there is no simple way to judge the importance of different factors.

The essentials of this phase of planning are that the planner use his judgement in selecting the preferred alternatives, and that the basis of the judgement is presented clearly to the decision-makers to facilitate their final assessment of the options.

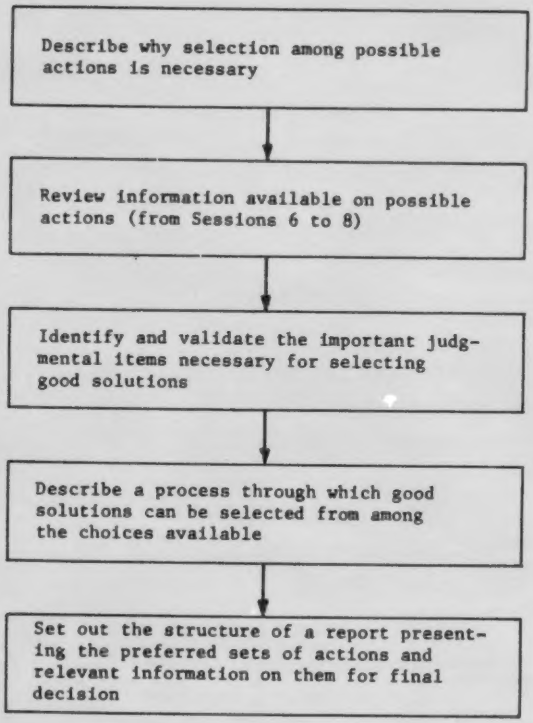
The ultimate step is the actual preparation of a submission for decision-makers which sets out solutions, preferred and alternate, incorporated in an outline implementation plan. Great care is needed in the preparation of this document in order to ensure that decisions can be made from it. The preparation and review of an outline plan is an important phase in the planning cycle and contributes to making the overall planning effort a more efficient process.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Formulate a systematic process for selecting between alternate solutions to solving manpower problems.
2. Combine aspects of two or more manpower policies to produce a practicable and internally consistent solution package.
3. Outline the structure of a report presenting the solution package to decision-makers.

SESSION STRUCTURE



Describe why selection among possible actions is necessary

Review information available on possible actions (from Sessions 6 to 8)

Identify and validate the important judgmental items necessary for selecting good solutions

Describe a process through which good solutions can be selected from among the choices available

Set out the structure of a report presenting the preferred sets of actions and relevant information on them for final decision

LEARNING MATERIAL

WHY MAKE A SELECTION BETWEEN SOLUTIONS ?

In Sessions 6 to 8 various types of solutions to manpower problems and some of their implications were considered. Taken together, these solutions offer a wide range of possible ways of dealing with a problem. Almost certainly only some of these ideas will be used and a selection must be made from amongst them.

Not all ideas for problem solution are used: selection must be made.

In the first place, there are likely to be insufficient resources for all the actions which are indicated: there will perhaps be too little money, or not enough trained staff, or not enough backing from other government departments.

Resources may be too few to match some proposed solutions.

Second, they may not all be necessary; all together, the package of solutions might exceed the desired results. Increased recruitment and training, less wastage, and more productivity might together produce a far larger increase in a staff group than the health plan calls for.

Other solutions may produce unnecessarily large effects.

Third, some combinations of actions might have opposing effects, so that one action would counteract another to a greater or lesser extent. For example, two options for reducing the shortage of health care staff may be to:

Some actions proposed may be in opposition to others proposed.

- increase the number of these staff to be trained, which will require more trained teachers;
- transfer qualified administrators and teachers to field posts.

These two actions would counteract one another and could not be undertaken simultaneously.

Management judgement is essential for deciding possible actions for two reasons.

These three factors -- limited resources, actions which will result in more than the required effects, and actions with conflicting effects -- demand that a selection be made from all the possible actions which may have been considered. At this point management judgement becomes very important because the manpower planner cannot select the preferred alternatives solely on the basis of numerical calculations.

Calculations tell only the quantifiable part of the story and other judgements are needed.

Calculations cover only those factors that can be counted, quantified or measured, such as numbers of staff of different types, number of patients attended per day, and so on. There are other important factors that cannot be quantified, e.g. staff morale, preference for particular types of work and parts of a country, and so on. All such factors should be taken into account when judgements are being made about possible actions and, for this, health service managers must be involved.

Calculations cannot judge which of two actions is better.

The second reason for the paramount importance of management judgement at this stage of planning is that no manpower planning calculations can tell which of two actions to achieve the same end is the better. If there are two ways of achieving the same result, planning calculations show what each would cost, what each action would require, what government departments and professional bodies would be concerned, how long each would take, and so on; but they cannot tell which of the two would be better.

HOW IS A SELECTION OF GOOD SOLUTIONS (ACTIONS) PREPARED ?

In preparing good solutions, first review past judgements about constraints, obstacles and consequences to confirm their continued validity.

To derive a set of good solutions from which decision-makers will select, the manpower planner has to work through two stages; first, reviewing judgements already made by himself and others on the calculations so far and, second, actually selecting which alternate sets of actions (solutions) will be submitted for a final decision.

In the first stage, he must try to identify the priorities of those who will pass the final judgement on the plan, e.g. which services would be given priority over others in the event of a conflict between them, which factors (timing cost, etc.) are more important, and so on. In addition, the manpower planner seeks to verify his own preliminary judgements regarding likely constraints, obstacles, and consequences. The most frequent errors at this stage relate to constraints (impossibilities) that turn out to be obstacles (difficulties), and obstacles that turn out to be constraints because of budgetary rigidities, or strained relationships between government departments which were originally unknown to the planner.

Three steps for checking previous judgements.

A good method of approaching this first stage is to:

- review all major options to be considered according to the suggestions given in Sessions 6 to 8;
- list the items that are thought to be important in regard to the effects, constraints, obstacles and consequences of these actions; and
- discuss this list in general terms with those who will be responsible for selecting actions for implementation in order to establish a hierarchy of priorities.

Second, select "good" sets of actions for final decision through a systematic analysis.

The next step is to select some "good" sets of actions in the light of the above information, and to present their elements and merits as clearly as possible. Just as the final decision rests solely on the judgement of a decision-maker, so the selection of some "good" sets of actions at this stage rests on the judgement of the manpower planner. It normally helps if the possible actions are listed so that the same types of action are grouped, e.g.:

As a first step, list all major options separately.

1. INCREASE TRAINING	1.1	Open school A in 1980
	1.2	Open school B in 1981
	1.3	Open school B in 1982
	1.4	Open school A in 1980 and B in 1982

2. IMPROVE UTILIZATION
    - 2.1 Provide clerical assistance to group P
    - 2.2 Eliminate administrative tasks in group P
    - 2.3 Relocate staff in group P so as to reduce travelling time.

An important point to note here is that each discrete and significantly different action or combination of actions is listed separately. For example, opening the same new school in either 1981 or 1982 are two different options and are listed separately (as 1.2 and 1.3 above), as is combining two actions (option 1.4 above), and each of these three should be listed separately.

Summarize information available on each action under 5 different headings.

Against each item in this list is entered a summary of the information available on it under the following headings:

- STAFF CHANGES, e.g. the numbers expected to be available in each year of the forecast as a result of the action;

- COSTS, prepared to the extent feasible to conform to standard accounting procedures, with indications of budget estimates and other financial information;

- CONSTRAINTS, such as any limitations on the expenditures relating to different groups or on the availability of other resources, limitations due to the policies of other government departments, etc.;

- OBSTACLES or difficulties requiring particular attention but which can presumably be overcome, given time and resources;

- CONSEQUENCES or results of the action, which present no particular difficulty or can be handled by normal management as they stand.

Identify actions which have important cross-effects on each other.

In drawing up the list it is particularly important to identify those situations where there is an interaction between two items on the list, i.e. those situations where undertaking the two actions together gives a result which is not simply the sum of the effects of the two actions taken separately. There are two ways in which these interactions can occur.

First, they may have opposing effects, as in the example quoted earlier when an increase in training (requiring more qualified staff to be brought into the training schools) acts in opposition to another suggestion for moving qualified administrators and teachers into service positions.

Some actions may act in opposition.

Second, some actions taken together may produce a larger effect than if each were taken separately. For example, increasing salary levels by itself may be designed to improve the recruitment of qualified staff from other sectors of the economy, and increasing training capacity by itself can produce more qualified recruits but only if the standard of the recruits is allowed to fall. If both were implemented, however, increased staff recruitment would result, and the higher salaries might also attract additional qualified candidates for the new training courses. In this case, the two actions reinforce one another and there is thus an extra advantage in undertaking them together.

Other actions may reinforce one another.

The next step, in many ways the most important, is to select from among the possibilities a set of actions for each type of staff which meets the staffing targets as closely as possible and which does so at the least total cost, monetary and other. It is relatively easy to identify those actions that come within an acceptable range of meeting the targets, with due recognition of any interaction effects. The more difficult part is adding up the "costs." The monetary costs can be easily summed, though frequently the calculations will include major uncertainties. However, the political, administrative, logistic, psychological and other costs not readily expressible in monetary terms will be difficult ones to assess. Information obtained earlier on these dimensions through discussion with managers and other interested parties will help the planner weigh these diverse factors to come up with action choices that merit first consideration.

Select from the choices a set(s) of actions to meet targets within the constraints of the situation.

However, even after assembling this information, it is very likely that it will still provide only a partial picture of the situation as seen by decision-makers. The planner may in fact find himself on occasion obliged to select from among what may appear to him to be equally attractive packages or sets of actions and then present the relevant information on each so that the final choice can be made by the decision-makers. Nevertheless, if the first stage of this process has been reasonably successful, decision-makers will have options to choose from which they themselves recognise as good.

HOW SHOULD THE CHOICE OF SOLUTIONS BE PRESENTED ?

The problem now is how to present possible choices simply.

The problem facing the manpower planner as he prepares for presentation of the solutions is to ensure that all the relevant material is presented to the decision-makers, but in such a form that they are not overloaded with a voluminous amount of material to read before they can arrive at a conclusion. Unless the proposals are succinctly and clearly presented, it is unlikely that the decision-making group will be able or willing to come to a conclusion.

As a first step, produce mini-documents about each group of staff.

To reach the point of making a submission, the manpower planner, or the manpower planning team, needs to proceed systematically in putting the documentation together into a simple package. This process begins with the preparation of a series of mini-documents, each of which is concerned with one type of staff and summarizes the alternate sets of possible actions to meet targets in quantity, quality and distribution of staff. Each mini-document should also include the information that was available and used in drawing up the solutions so that decision-makers can clearly understand what is proposed, the basis for the proposals and the commitments thereby implied. The structure of the mini-document would consist of

- target(s) for the group considered;

- a brief description of each set of actions showing the changes in the staff group situation in each year and the costs of making these changes; and
- a set of appendices showing in tabular form how the proposed changes will occur, together with relevant comments (an example of this is shown in the Illustration at the end of the Learning Material).

Use mini-documents for discussion and to prepare outline plan.

These mini-documents are to be used by the manpower planner for preliminary discussions with decision-makers and as the basis from which a comprehensive outline plan covering all staff is drawn. Again, it should be re-emphasized that the development toward an outline plan has to be done in an orderly way because the very complexity of the issues and solutions can lead to great confusion unless the development of arguments is taken systematically.

The outline plan should contain in outline form problems, alternate solutions, and implementation plans for preferred solutions.

The outline plan is, as its name implies, an outline. Its purpose is to bring together, in a reduced or outline form, information on manpower problems and targets, alternate solutions and their implementation, so that decision-makers can determine which options or strategies to follow for the future. The outline plan is the medium through which the solution choice is presented formally to the decision-makers. To achieve its purpose, the outline plan should contain at least the following:

- the terms of reference of the working group and relevant policy directives;
- the working procedures followed:
- a description of priority health manpower problems;
- a list of the major policy options considered, along with their main advantages, disadvantages, likely effects and approximate costs;

- a somewhat more detailed description of the policy option(s) advocated by the manpower planning team, including:
  - proposed implementation strategies,
  - estimated developmental and operational costs,
  - time frame in which it is proposed to implement these strategies,
  - the expected side effects, both positive and negative, and
  - the various intersectoral legislative and political implications of the HMD programme.

Much of the information required for completing this outline plan will already have been developed and structured in the preparation of the mini-documents and this simplifies the compiling of the more complex structure of the outline plan.

The outline needs careful preparation, both as to technical issues and as to policy-making processes.

The outline plan should be as brief as possible consistent with providing the decision-making group with the necessary information. The detailed data collections and analyses upon which the manpower planning team based its recommendations should be available to decision-makers on request, but would not normally be included in the outline plan, except perhaps as appendices. This outline, on the basis of which the working group will obtain further guidance on how to proceed with a detailed plan, must be prepared with the greatest of care. Above all, it must take into account not only technical issues but also the policy-making process and organization of the country to ensure that the proposals are not only sound and feasible but also have good prospects of implementation. By understanding the constituent parts of the policy-making process and of the roles of the various participants, and by tailoring the solutions proposed accordingly, the planner can increase the chances that the outline plan submitted to the HMP decision-making group will be well-received (see Session 1), or at the very least, minimize unnecessary conflicts.

The desired product of the outline plan review is a mandate and a detailed set of directives which will enable the manpower planning group to proceed with the elaboration of a detailed plan. However, it should be expected that the outline plan may require substantial modifications before the decision-makers are prepared to recommend it for detailed elaboration. Nevertheless, by submitting the outline plan as a point of decision at this stage in the planning cycle, the planning team can avoid or minimize the risks of investing a large amount of time and effort in the detailed exploration of policy options with uncertain chances of adoption, and by so doing, can make the overall planning effort more efficient.

The outline plan submission is an essential step in making the overall planning an efficient process.

ILLUSTRATION

SUMMARY TABLE — MANPOWER SOLUTION PACKAGE

STAFF GROUP P

Actions	Numbers in Each Year					Cost	Problem Areas Requiring Attention	Other Actions Needed
	1980	1981	1982	1983	1984			
BASELINE PROJECTION	1000	964	928	992	1056			
OPTIONS								
1. OPEN NEW SCHOOL in 1980 (2 year course)	-	-	100	100	100		Develop agreements covering new establishment and syllabus with the Ministry of Education	Set up arrangements for planning and supervising practical work during training
2. REDUCE WASTAGE BY 10% (now 40 per year)	4	4	4	4	4		Negotiate new grading structure and pay levels	
3. IMPROVE STAFF UTILIZATION BY 5%	50	48	46	49	52			1. Design new forms 2. Recruit and train new clerks
TOTAL (FTE's)	1044	1016	1078	1145	1212			
TARGET	1000	1050	1120	1150	1200			

COMMENTS: Total staffing is on target in 1983/4, but somewhat below in 1981/2.

In ACTION 1 the agreements on the new establishment and syllabus must be produced within the next 6 months if the schedule is to be maintained.

In ACTION 3 the new forms must be designed and approved before training in their use can begin.

EXERCISES

EXERCISE 1. Choosing Between Solution Options

In Sessions 6 to 8 you considered several different types of action which could be undertaken to remove or alleviate the difficulties which are anticipated for your chosen category of staff. It will not be possible to implement all of these actions because of constraints of money, time, goodwill, etc. So a choice must be made to select a number of these actions (solution package) for inclusion in the manpower plan.

1. Review all the actions you have considered for implementation for your selected staff category in Sessions 6 to 8. Discuss how best they can be evaluated and compared to take account of:
   - (a) their benefits, i.e. the effect each action would have on solving the problems of the staff category you have chosen;
   - (b) their costs, i.e. the resources of money, time, goodwill, etc., each action would require for its implementation;
   - (c) their interactions, i.e. where one action may reinforce the effects of another (increasing salary levels to increase the recruitment rate of qualified staff will also increase the recruitment rate of learners for training) or where one action reduces the effects of another (cooperation from another government department on one action may reduce the chance that it will cooperate on another) (see page 9.4).
2. In your view, which of these actions (or closely related groups of actions) could not be implemented and what constraint makes them impracticable?
3. Turning now to the remaining actions considered in 1 above, which do you think should be implemented? Which of these actions would you drop

out of the package if there were a 5% reduction in the budget for these staff? What extra action(s) over and above your original solution package would you add if there were a 5% increase in the budget for these staff?

EXERCISE 2. Presenting a Solution Package

It is also important to be able to marshal facts correctly in presenting a health manpower plan so that the benefits, costs, obstacles and other consequences of implementing the plan are clearly set out.

1. Decide on the best way to present to a decision-maker the benefits, costs, obstacles and other major consequences of the original solution package in Exercise 1. Possible ways of presenting this information are:
    (a) to treat the whole package you are proposing as a single entity, i.e., "The actions we propose are .... Their total effect on staff members is .... Their total cost is .... The obstacles to implementation we foresee are ...." and so on;
    (b) to treat each action as a separate item describing the benefits, costs, obstacles, etc., of each; or
    (c) a mixture of the two in which some actions are treated separately and others are grouped together.
2. On the basis of this, outline the structure of a report presenting the solution package to decision-makers (see page 9.7).

EVALUATION QUESTIONNAIRE FOR SESSION 9

Date ____________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

	Not at all	Poorly	Fair	Well	Very well
1. Formulate a systematic process for selecting between solutions.	☐	☐	☐	☐	☐
2. Combine aspects of two or more manpower policies to produce a solution package.	☐	☐	☐	☐	☐
3. Outline the structure of a report presenting the solution package to decision-makers.	☐	☐	☐	☐	☐

	Not at all	A little	A fair amount	Most of it	All of it
2. Did you read any of the learning material before the session?	☐	☐	☐	☐	☐

3. Was the learning material:

	Not at all	Some-what	Fair	Moder-ately	Very
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

4. Did you find the illustrations:	Not at all	Somewhat	Fair	Moderately	Very
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐

5. Did you find the exercises:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentage allocated to each activity when added up should equal 100 percent.

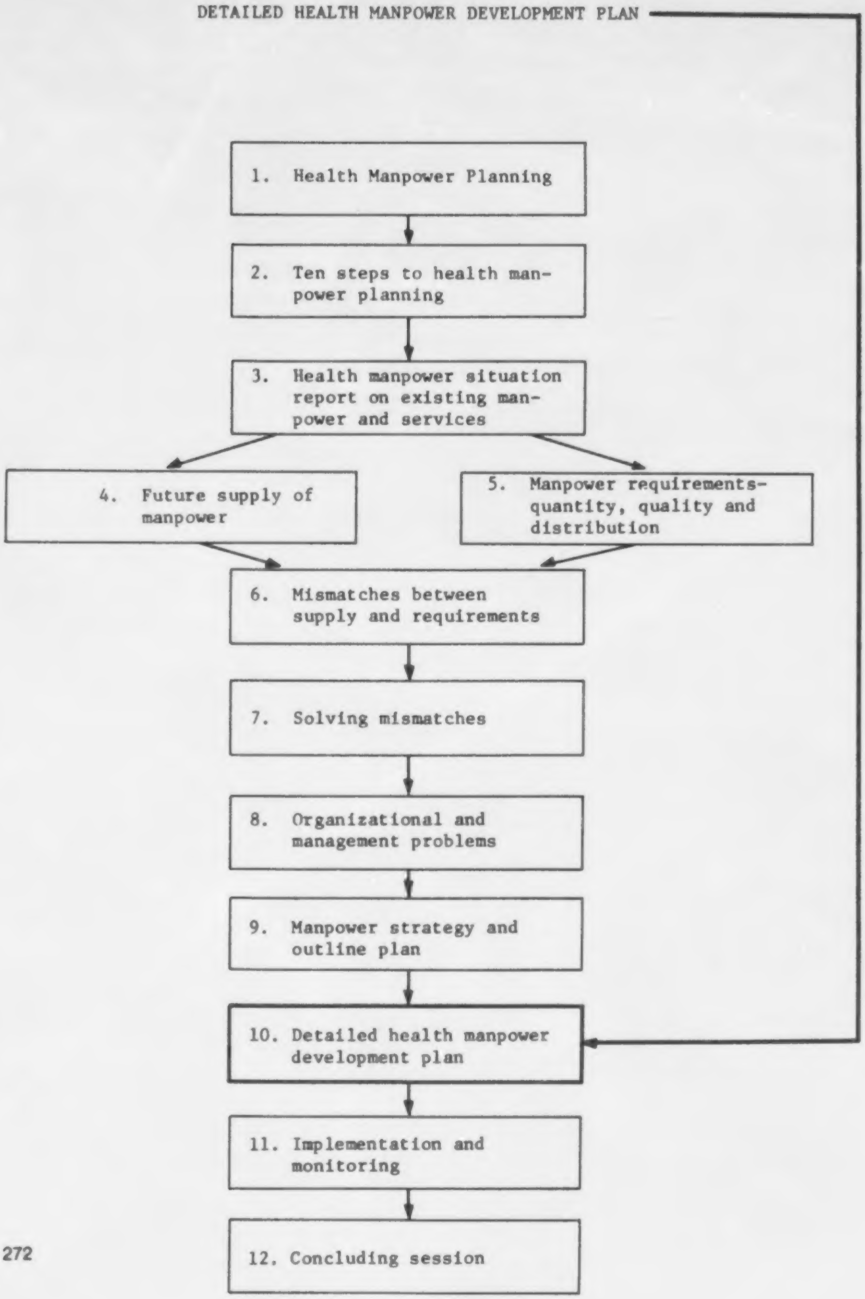
8. Do you have any other comments?

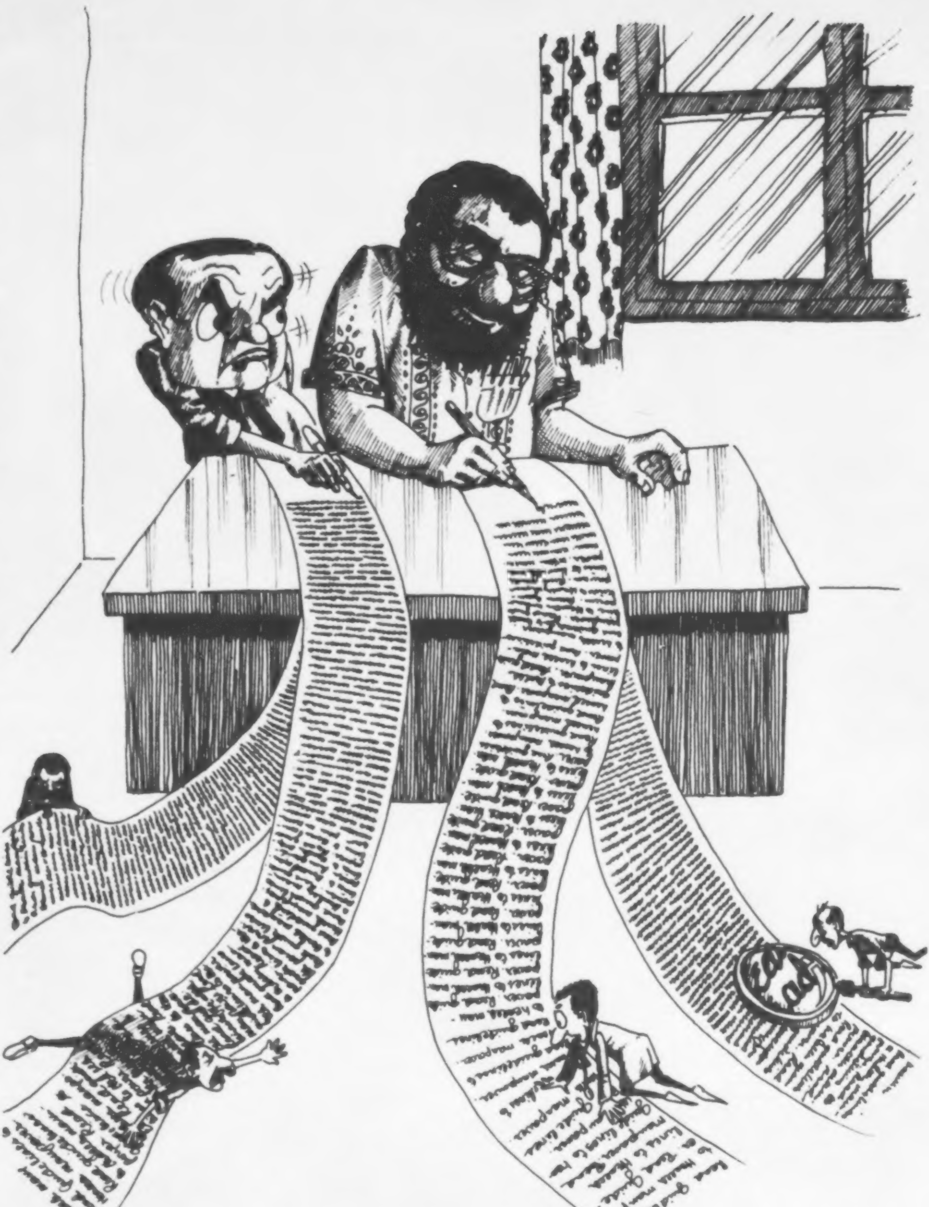
Name________________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION 10

DETAILED HEALTH MANPOWER DEVELOPMENT PLAN


DETAILED HEALTH MANPOWER DEVELOPMENT PLAN
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session



EXAMINING DETAILS

SUMMARY

Once the steering committee has approved the outline plan describing the health manpower developmental strategies, the HMP working group can prepare the detailed plan. The detailed plan describes and defines the operational programme through which the HMD objectives are to be achieved. This is the official document which, after the final approval of the steering committee, is distributed to the concerned sectors and institutions for action.

This Session is concerned with contents of the detailed plan document and the process through which the document is prepared. The plan format will vary from country to country, but it is likely that the principal elements involved will remain relevant to all situations.

Converting programme objectives into a set of coordinated activities, linked to the resources they require, can be a complicated operation. A method of doing this is discussed during the Session. The end product of this activity is a comprehensive document covering all aspects of the HMD programme.

The work of the HMP working group concludes with the compilation of the final detailed plan document. The work of the planners does not end as they will need to continue to be involved in monitoring progress and updating the plan as necessary.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Specify the necessary elements of a realistic health manpower development plan.

2. List planned programme activities and arrange them in an operational schedule.

3. Describe and relate the resources needed to implement the planned activities.

SESSION STRUCTURE

Review the necessary components of a detailed health manpower plan

↓

Determine how the plan preparation process is to be organized

↓

Clarify programme activities and determine how these activities can be organized into a schedule of events

↓

Review additional actions necessary to finalize working, managerial and organizational arrangements and to prepare an operational budget

↓

Decide what will be included in the final format of the detailed plan document

LEARNING MATERIAL

WHAT ARE THE ELEMENTS OF A DETAILED MANPOWER PLAN ?

The HMP working group now turns to the tasks of deciding on, and designing, the set of activities to implement the HMD outline plan. In brief, the emphasis shifts from proposals to details of action.

HMP working group shifts attention from a review of planning alternatives to the detailed elaboration of the plan.

The detailed plan, while varying from situation to situation in the extent and nature of its contents, should contain at least six different elements covering the following items:

There are six elements to the final plan document.

1. planned HMD programme activities, and their anticipated products and problems;
2. organization and management of HMD programmes;
3. implementation schedule for the major activities;
4. development and operating budgets for the programmes;
5. outlines of the roles and responsibilities of the participating agencies, institutions, and interest groups and of the arrangements for coordination and communications; and
6. procedures and indices to be used for plan evaluation and monitoring.

A major question of concern to the HMP working group is the level of detail needed in the plan. At first, planners may be tempted to separate major activities into too many different component parts, even though some activities, for instance, may be better described in broad terms so that a programme manager may be free to exercise discretion in defining and scheduling them later. In general, at this stage a broad

The level of detail in the plan should be sufficient to guide managers but leave room for discretionary action.

phasing of programmes and a detailed scheduling of the first few months is all that is needed.

Necessary management procedures and resources should be provided for in the plan.

The HMP working group will need also at this stage to outline procedures and resources needed to manage the activities. Decision-makers tend to neglect management as an aspect of plan implementation, and may resist making provision for it.

HOW SHOULD THE PLAN PREPARATION PROCESS BE ORGANIZED ?

Programme objectives will need revision to accommodate changes from the outline plan review.

Having completed the outline plan review, the working group first revises the preliminary objectives of the HMD strategies according to the comments of the steering committee to produce a final set of objectives acceptable to the decision-makers. The objectives specified should refer to the most important goals of the programmes.

A continuous high level of communication and strict adherence to an agreed format will need to be maintained during the detailed plan formulation.

At this stage of detailed programme formulation, the material should be written up continuously as work proceeds. This implies continuous communication within the group and frequent coordinating meetings with institutions and organizations to ensure that the detailed plan is realistic. It is important to agree in advance on the outline of the planned document and to see that the outline is followed strictly. Any change in it should be decided on in a meeting of the group. The need for adequate secretarial help and other practical support cannot be overemphasized.

HMP working group should be expanded at this stage to include programme managers and staff from budget and finance, and personnel divisions.

The HMP working group itself may continue to formulate the detailed programme. Alternatively, the group may usefully be enlarged to include representatives of those groups that will carry out the programmes, as well as of other important units such as budget and finance, and personnel. The working group may either consider the various constituent programmes in sequence, or split into sub-groups that work simultaneously on the different HMD programmes. The latter is the better alternative if several programmes have to be formulated in a short time and if they demand different kinds of expertise or agency participation.

WHAT ARE PROGRAMME ACTIVITIES ?

Having clarified and re-defined the objectives of the programmes, the working group must begin to plan the programmes in detail. Although major activities of the programmes were defined earlier, they have now to be identified in more detail.

Two types of activities need to be considered: developmental and continuing.

Programme activities can be divided into two broad groups, developmental and continuing activities. Developmental activities are aimed at improving the effectiveness and efficiency of the health manpower system. They are usually intensive and time-limited and take the form of projects. For instance, all the activities needed to expand a training institution can be grouped as a time-limited project (e.g., constructing facilities, procuring supplies and equipment, recruiting and training teachers, and increasing the intake of students).

Development activities have a finite lifetime. Continuing activities go on indefinitely.

Once the developmental phase is finished, the training institutions continue to operate at their new level of training and it now becomes a continuing operation. These continuing activities include payment of staff salaries, student admissions, monitoring and improvement of curricula, and appointment of graduates in the health services. One cannot always distinguish developmental from continuing activities since some activities belong to both categories. Thus admitting more students and continuing to admit students are similar. The distinction between developmental and continuing activities is that the former have a finite lifetime and cease when the project ends, while the latter continue indefinitely.

Various possible activities to be included in the plan are shown under six headings.

The following are examples of the types of activities that might be included within a programme plan:

1. Policy, communication and coordination: activities to bring about changes in policy, legislation, methods of inter-agency coordination and communication, and levels and forms of participation of interest groups and the public.
2. Job design and task analysis: studies of job tasks and functions, and to determine job descriptions, staffing patterns, etc.
3. Training: revision of curricula, design and execution of continuing-educational programmes, in-service training, upgrading of training facilities, recruitment of teachers, etc.
4. Administration and support: activities directed toward strengthening programme administration, support activities such as the recruitment of staff or consultants, purchase of equipment, etc.
5. Facility construction: plans for the design and construction of new or expanded facilities.
6. Evaluation: specific indicators and measures of progress toward achievement of targets or objectives.

Organizing these activities into an orderly array can best be done with an activity matrix.

All these types of activities may not take place in all programmes. Whichever activities are included should be quantified if possible, i.e., what will be done, by whom, how and when, and to what presumed effect. Thus targets should be set for programme operations, such as the number of students to be trained, the number of service staff to be re-trained, etc. Arranging these activities into an orderly array for the purposes of coordination between activities may pose something of a problem. To overcome this difficulty, the different activities should be arranged in an "activity matrix." In this matrix the types of activities are on one axis and the types of changes that are being attempted through these activities are on the other. This matrix provides a visual aid to ensuring that all aspects of the programme are considered systematically. An example is given in Table 10.1.*

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*This table is based on Bainbridge and Sapirie (see reference), but the headings do not exactly correspond to those in this text.

Table 10.1. CHANGE/ACTIVITY MATRIX FOR COMMUNITY HEALTH WORKER STRATEGY

	ACTIVITIES					
CHANGES	DESIGN	TRAINING	PROMOTION	IMPLEMENTATION	SUPPORT	PROJECT ADMIN.
Policy						
Use of traditional practitioners, midwives, lay volunteers	Draft policy guidelines		Promote concept within Min. Interior			
Payment	Design payment system			Initiate payment scheme		
Organization						
Coordination with Min. of Interior, Commun. Develop.	Design liaison procedure		Promote concept with Min. Interior		Establish & maintain coordination	Follow-up
Technology						
Delivery technique Breast feeding Nutrition suppl. General hygiene	Standardize technique		Publicize the technique			
Staff						
Traditional midwife Traditional practitioner Lay volunteers	Write job description	Conduct training courses	Publicize the strategy; promote use of these staff with health professionals	Begin recruitment and registration		Monitor recruitment, training
District health staff	Revise job description	Train gov't staff in supervision Train tutors				
Procedures						
Registration Recruitment	Design promotion, registration & recruitment procedures					Monitor performance
Training	Write manuals & curriculum			Produce procedure manual	Distribute manuals	
Specify (supplies)	Specify supply requirements					
Supervision						
Referral/comm.	Design proced.					Evaluate the strategy

Once the activities are defined, they must be converted into resource requirements.

With the detailed definition of the activities comes the need to calculate in more detail than was done for the outline plan the specific resource costs associated with each of the activities. Here the contributions of the budget and finance unit will be very valuable. All the activities identified have to be converted into resource requirements -- human, physical or other. The resources can be classified according to the following broad categories:

1. Personnel: project staff, consultants and others
2. Facilities: construction, rental, overheads
3. Equipment: vehicles, capital equipment and supplies
4. Administrative costs

Resources for developmental activities have to be considered in total, and those for continuing activities only for the programme components which have changed. The combination of the two provides a statement of the increased resource requirements over that which was necessary in the previous plan period.

HOW ARE ACTIVITIES ORGANIZED FOR IMPLEMENTATION ?

Draw up a list of activities in their appropriate sequence.

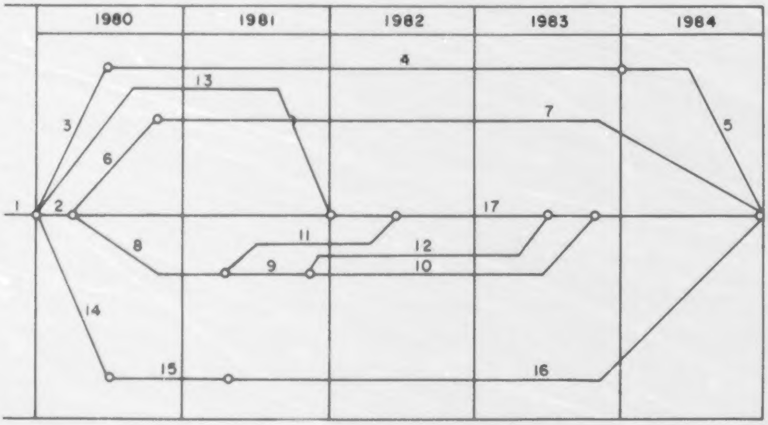
Implementation involves the organization of activities to be undertaken in each programme. This will require the listing of activities in an approximate sequence of performance. Table 10.2 provides an example of such a list. The sequence of listing can be determined by asking the following questions about each activity:

1. What activities must be completed before this one can be undertaken?
2. What activities cannot begin until this one is completed?
3. What activities can be carried out at the same time?

Table 10.2.* MAJOR ACTIVITIES AND MILESTONES

ACTIVITY NO	ACTIVITY TITLE	MILESTONE	DATE
1	Review Proposal	Approved	JAN 1980
2	Establish Provincial Health Advisory Committee	Established	APR 1980
3	Design Mobile Health Service	Completed	JUL 1980
4	Train Mobile Teams and Independent Mobile Service	First District All Districts	OCT 1980 DEC 1983
5	Evaluate/Revise Mobile Health Service	Completed	DEC 1984
6	Set up Registration System for Traditional Practitioners	Established	OCT 1980
7	Train Community Health Workers	300 trained	DEC 1984
8	Implement Provincial Health Education Programme	Covering 90 % population	MAR 1983
9	Design Community Health Participation Programme	Completed	NOV 1983
10	Implement Community Health Participation Programme	300 villages	JUL 1982
11	Set up Traffic Accident Prevention Programme	Established	JUL 1982
12	Implement Emergency Transport and Communication System	313 villages	JUL 1983
13.	Make Health Centre Improvements	Completed	DEC 1981
14	Develop Operating and Supervisory Procedures	Completed	JUL 1980
15	Set up Staff In-Service Training	Established	MAR 1981
16	Conduct Staff In-Service Training	1st Round Compl. (all Health Centre Staff)	DEC 1984
17	Provincial Assessment, Annual Budget Submission and Plan Revision	Continuing	

Figure 10.1.* PHASING OF MAJOR ACTIVITIES**



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*From Bainbridge and Sapirie (see references at end of Session)
**The activity numbers refer to activities listed in Table 10.2.

Arrange the activities in the form of a network to permit identification of "critical" activities.

The duration of these activities should also be estimated. This enables a network to be drawn which not only gives a diagrammatic overview of the schedule but also enables the planning group to identify which are the "critical" activities that could hold up the programme. An example of such a diagram is shown in Figure 10.1.

Specify "milestones" for measuring progress toward objectives.

For each activity it is helpful to identify events or actions that can be used to measure progress toward objectives. These are often termed "milestones," and they usually signal the completion or the commencement of one or more activity sequences. Examples include budget approval, the start of the construction of a new school, or a new academic year with an expanded student body. These milestones should also be labelled on the network. (See Table 10.2 and Figure 10.1.)

Finalize working, managerial and organizational arrangements.

Once the activity schedule has been prepared, the HMP working group is now ready to finalize the approach to implementing the activities. Imagination is needed at this point to circumvent potential obstacles and to take advantage of certain opportunities. The following is a check-list of items that the working group may find useful in completing the implementation plan:

1. Responsibility for implementation. Specific individuals or institutions should be designated as responsible for each activity. Decision-makers often under-estimate the need for clearly designated programme managers, thereby depriving implementing staff of a focal point to their activities.

2. Support for new and incremental activities. The HMP group should determine how many of the planned activities can be undertaken with existing staff and resources, and, for those that will need more staff or other resources, the amount and source(s) of such additional support.

3. Potential problem. The plan should be sensitive to potential political or technical problems, including problems of gaining public and professional acceptance. Specific actions should be planned to gain acceptance, to promote understanding and support, and to anticipate problems that are likely to arise.

4. Managerial approach. This refers to the overall design for programme organization and management. Depending on the size of the planned tasks, the organizational structure may rely almost entirely on existing institutions or may require new structures.

At this point, with the activities scheduled and the resource requirements determined, the HMP working group should now be ready to prepare the programme budget with its developmental and recurrent components, showing the total and annual costs of the major expenditure categories. The budget may have to be prepared in various formats. One form of budget presentation may be necessary to facilitate programme management and the coordinating and monitoring of activities as a whole by the ministry. In many situations, this presentation will be different to that needed to meet the statutory requirements of the Ministry of Finance and hence an alternate budget submission may also need to be prepared to meet these requirements.

Prepare budget statements to meet needs of both the programme and the finance ministry.

WHAT WILL BE IN THE FINAL PLAN DOCUMENT ?

Having now completed all the interim stages of the detailed plan preparation, the HMP working group is ready to compile the results of this work into an operational plan document to be used primarily by programme managers and also by ministry decision-makers. The contents of the document will vary from country to country, but it is likely that every detailed plan will contain entries under each of the following headings:

The final step is to compile the detailed plan document in the format agreed at the beginning of this phase of the formulation.

Part I: Main Document

Introduction and overview (mandate, methods and procedures)
Executive summary
Summary of the situation report
Plan objectives
Manpower supply and requirements
Manpower problems, existing and anticipated
Alternative strategies for resolving the problems
Preferred strategy (i.e., the one that has been adopted)
HMD programme activities
Resource requirements
HMD programme budget
- Capital (or development) budget
- Recurrent budget

Timetable for implementation
Programme management and allocation of responsibilities
Other aspects of the HMD programme
Protocol for monitoring and evaluation

Part II: Appendices (Annexes)

Terms of reference
Steering Committee members, and their affiliations and roles
Relevant tables from situation report
Development policies
Organization diagrams (of Ministry of Health and Ministry of Education, if relevant)
Manpower projections (supply and requirements)
Job descriptions
Training institutions
Background information on budget calculations

The completion of the plan document completes the work of the HMP working group. Planners, however, must continue to help monitor implementation.

The preparation of the final detailed plan document brings to an end the work of plan formulation, but it does not end the work of planners. The HMP working group may, however, be disbanded at this point or it may decide to continue in some form to help in monitoring the plan and updating it. However, the intensive phase of the group's work ends at this point.

REFERENCE

1. Bainbridge, J. and Sapirie, S. Health project management. Geneva, World Health Organization, 1974 (pp. 140-157).

EXERCISES

EXERCISE 1. Preparing a Format for the Detailed Plan

You have already worked on the manpower problems of a selected category of health workers. You have identified problems and proposed solutions. You have obtained the approval of the steering committee to develop the detailed HMD plan which will be discussed again by the committee before it is sent to the Cabinet for approval and funding. The Minister of Health is the chairman of the steering committee. On this basis:

1. Prepare an outline of the final document, including headings, sub-headings and approximate length of each section.

2. Specify which aspects of the plan you will emphasize in the Executive Summary.

EXERCISE 2. Activity Scheduling

You have identified the major activities needed to implement your proposed plan.

1. List ten to fifteen such activities, along with their corresponding milestones of progress.

2. Place these activities in proper sequence and estimate the time needed (in weeks) to complete each one.

3. Prepare a simple network showing the major interactions of these activities, and identify those activities judged to be critical to the sequencing and success of the plan.

EVALUATION QUESTIONNAIRE FOR SESSION 10

Date ____________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

	Not at all	Poorly	Fair	Well	Very well
1. Specify necessary elements of a realistic HMD plan.	☐	☐	☐	☐	☐
2. List planned programme activities and arrange in an operational schedule.	☐	☐	☐	☐	☐
3. Describe and relate resources needed to implement planned activities.	☐	☐	☐	☐	☐

2. Did you read any of the learning material before the session?

Not at all	A little	A fair amount	Most of it	All of it
☐	☐	☐	☐	☐

3. Was the learning material:

	Not at all	Somewhat	Fair	Moderately	Very
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

4. Did you find the illustrations:	Not at all	Somewhat	Fair	Moderately	Very
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐

5. Did you find the exercises:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues?	☐	☐	☐	☐	☐

6. Did you find the time allocated	Too little	Less than needed	About right	More than needed	Too much
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

7. If you were organizing this session, what percentage of time would you allocate to:	10	20	30	40	50	60	70	80	90	100
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

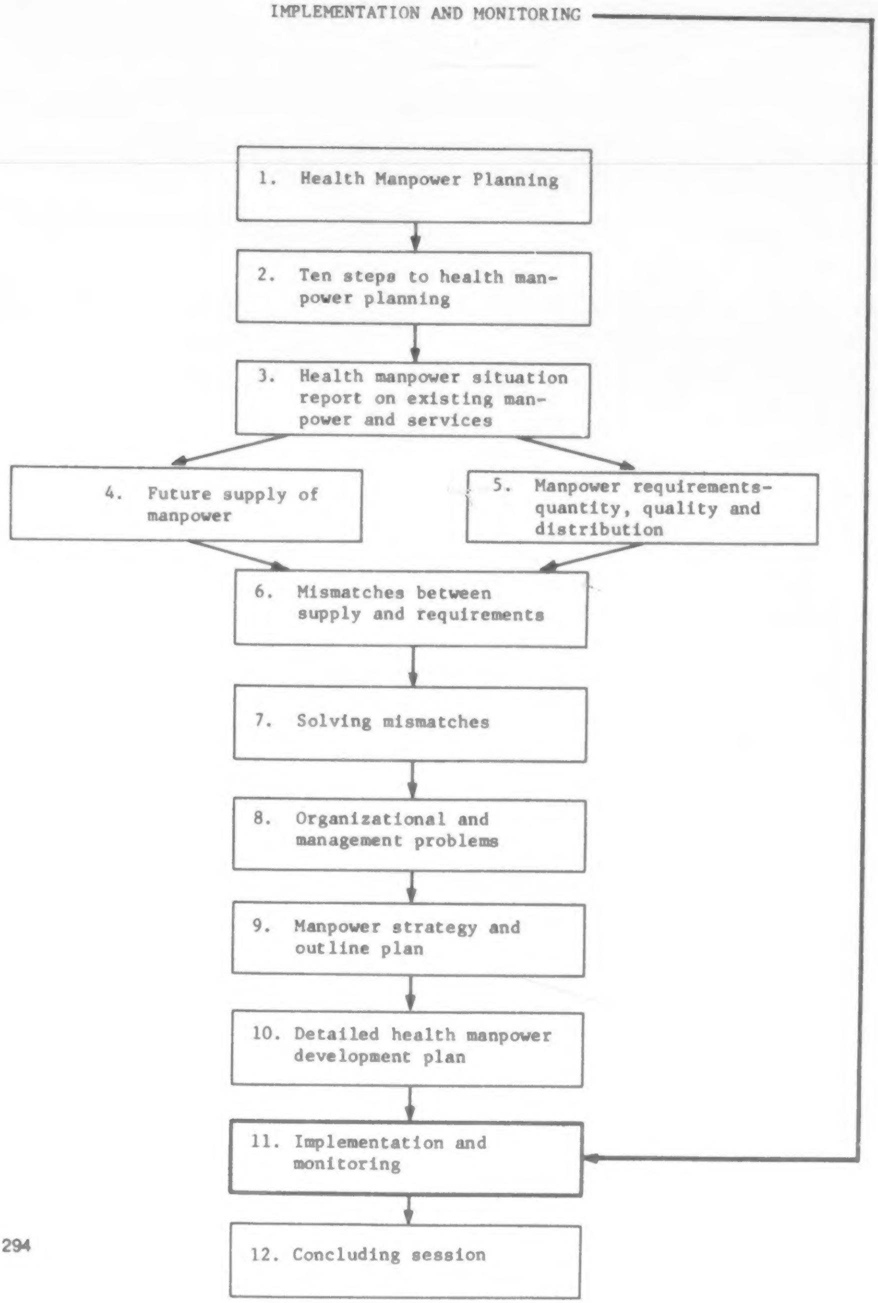
8. Do you have any other comments?

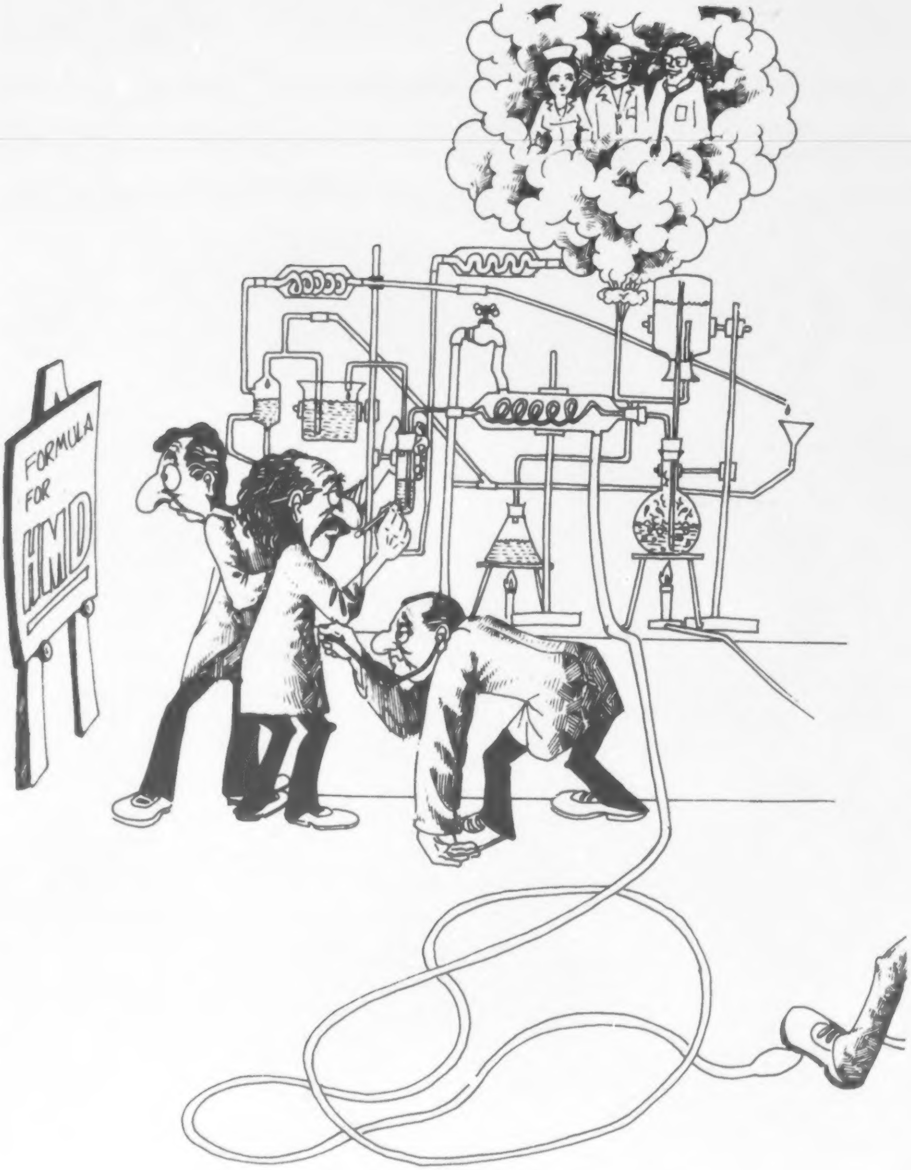
Name ______________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION II

IMPLEMENTATION
AND
MONITORING


IMPLEMENTATION AND MONITORING
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session


FORMULA
FOR
HMD

IMPLEMENTATION & MONITORING

SUMMARY

Very often plans are not implemented because of difficulties associated with the nature of the planning and management structure of the ministries and other bodies. Abandoning plans undermines a ministry's attempts to coordinate and control the direction and progress of the health service. Re-planning (or mid-course planning adjustment) is an essential part of implementation since it enables planners to deal with unforeseen developments.

Planners and planning units have a significant role in coordinating implementation and providing an analytical resource for the operational units.

To monitor health manpower development programmes, data must be collected and analyzed from the three different elements of the health manpower system: training or education, service delivery, and administration. Progress toward attaining plan objectives is monitored to (1) identify problems while corrective action can still be taken, and (2) provide the bases for updating and extending plan objectives, targets, and the means of attaining them.

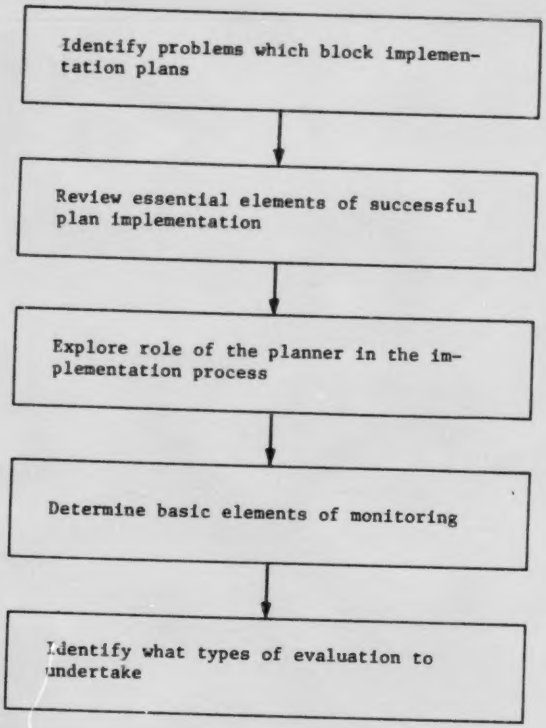
Evaluation and review of progress should be undertaken at least annually, followed by corresponding adjustments to plans. The extent and frequency of reviews will depend on the speed with which problems emerge and the capacity of the ministry to respond.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Identify the major types of uncertainties which necessitate re-planning if the plan is to remain as a useful guide to implementation.
2. List at least three important functions the planning unit should fulfill to help ensure the implementation of a health manpower development plan.
3. List the three major components of the health manpower system that will need to be monitored during plan implementation, and indicate the main kinds of data that should be collected and analyzed for each one.
4. Specify what evaluation and review is necessary to ensure effective implementation.

SESSION STRUCTURE



Identify problems which block implementation plans

Review essential elements of successful plan implementation

Explore role of the planner in the implementation process

Determine basic elements of monitoring

Identify what types of evaluation to undertake

LEARNING MATERIAL

WHY ARE PLANS NOT IMPLEMENTED ?

The previous session (Session 10) was concerned with the preparation of a detailed health manpower development plan. The purpose of the plan is to provide operational instructions for training institutions, administrative units, units concerned with the health manpower development, and service units. The plan also provides a coordinating link between all the bodies variously engaged in the production, management and use of health staff.

The plan identifies decisions and actions to be taken and paths to follow to attain stated objectives. The plan also provides a way of assessing achievement.

The plan is, in effect, a series of proposals for making health manpower available and using it to implement health plans. The plan describes implementation activities to be performed, both immediately and throughout the time between the present and the end of the plan period; the closer the plan is to the present, the more detailed it will be. The plan will also provide for a means of measuring achievement, and mechanisms for adjusting objectives, targets, and methods of implementing it. The plan is thus an integral element of the implementation process.

In many places, planning may be unrelated to implementation.

Nevertheless, in many places the preparation of a five-year plan or even of an annual plan has little significance in the day-to-day activities of health service units once the planning period is completed. In these circumstances, planning is reduced to theorizing about the health ministry's activities. While this is undoubtedly important, it is not the main purpose of planning and has the effect of reducing or distorting the sense of purpose of the health services. Plans are abandoned for various reasons such as:

Plans are poorly implemented or abandoned for a variety of reasons.

- an unrealistic national development plan that imposes structures and targets on sector plans which make them unfeasible;

- lack of coordination between the fiscal and other plan elements;
- excessive plan rigidities that do not permit adjustment to changing circumstances;
- frequent changes in plan objectives, targets and procedures so that it is difficult to sustain coherent programme development;
- too few mechanisms for controlling and coordinating activities;
- inadequate administrative and managerial capacity;
- inadequate evaluation of programmes so that problems are not identified in time to find solutions for them.

To cope with the many uncertainties inherent in plan implementation, it is essential to have the capacity to modify plans in mid-course.

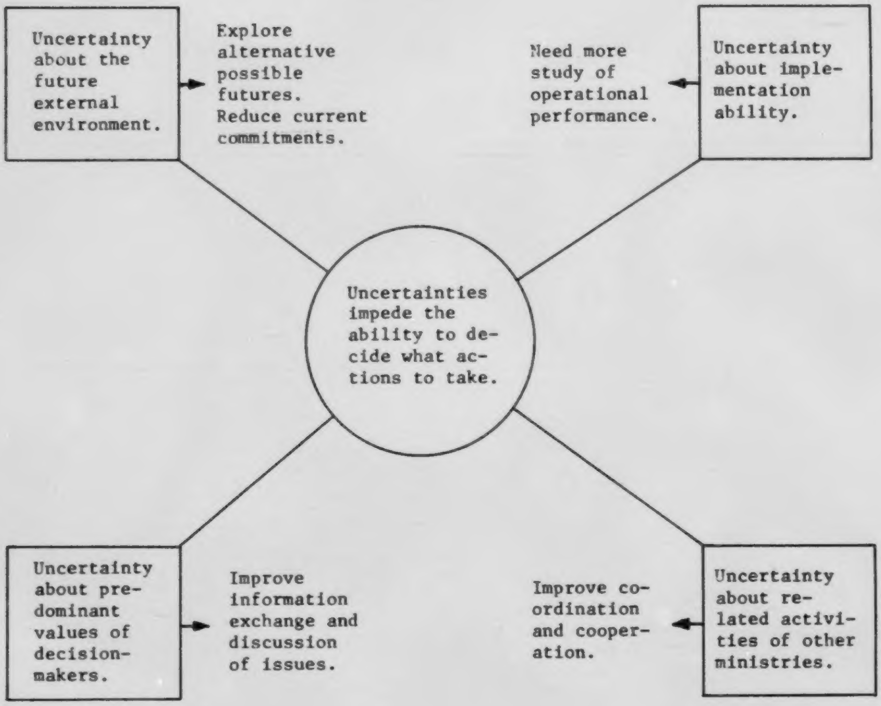
These and other factors contribute to the non-implementation of a plan. Accordingly, the ability to re-plan or, better perhaps, to modify the plan in mid-course, is essential. Re-planning is a necessary part of implementation because inevitably plans are prepared in an atmosphere of:

- uncertainty about the external environment;
- uncertainty about the values of administrators who are directly and indirectly concerned with implementation of plans;
- uncertainty about related activities of other ministries affecting health;
- uncertainty about the ability of health care units to implement planned activities.

Four types of uncertainty exist and there are ways of reducing them.

Because of these uncertainties, it is difficult to decide precisely what actions should be taken over an entire plan period. Figure 11.1 suggests some ways to reduce uncertainties or, at least, to identify new developments promptly and take them into account.

Figure 11.1. COPING WITH UNCERTAINTIES

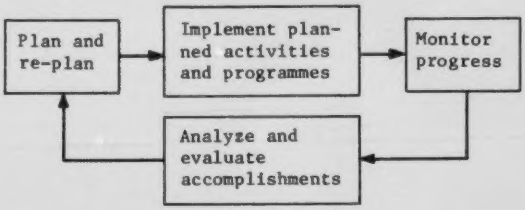

Uncertainty about the future external environment.
Explore alternative possible futures. Reduce current commitments.
Need more study of operational performance.
Uncertainty about implementation ability.
Uncertainties impede the ability to decide what actions to take.
Uncertainty about predominant values of decision-makers.
Improve information exchange and discussion of issues.
Improve coordination and cooperation.
Uncertainty about related activities of other ministries.

HOW DOES PLANNING FIT IN IMPLEMENTATION ?

No matter how thoroughly a plan is prepared, implementation is likely to be threatened by unforeseen developments, and some re-planning will be necessary.

Timely feedback on plan implementation is a crucial element in the planning/implementation cycle.

In its simplest terms, the planning/implementation cycle includes the four steps outlined below:


Plan and re-plan
Implement planned activities and programmes
Monitor progress
Analyze and evaluate accomplishments

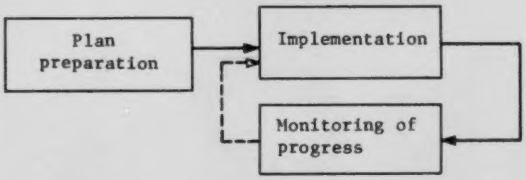
How often re-planning takes place depends on various factors, especially on the amount of uncertainty that prevails.

The plan preparation/implementation/re-planning cycle will have a frequency which depends on:

- the degree of uncertainty;
- staff capacity to undertake re-planning;
- the normal review cycle of a ministry;
- the duration of the planning period.

Re-planning may not form an intrinsic and sustained part of plan implementation and, if not, effectiveness is reduced and morale lowered.

In many places, during plan implementation, re-planning is not carried out or, if it is, it is soon abandoned. What then occurs is represented in the following diagram.


Plan preparation
Implementation
Monitoring of progress

Information on progress is collected and compiled, but the information is either not relevant to observing operational problems or is not analyzed at all or not in a way that allows the managers to recognize what is happening. In circumstances such as these, the manager reverts to spontaneous responses to implementation problems which ultimately reduce programme effectiveness and quite often sap the morale of the staff.

Operational units often encounter many obstacles to coordination with other units during plan implementation.

Other problems in making proper use of implementation information also confront managers. While information for monitoring purposes comes from their own units, their ability to use this information to coordinate their actions with other units is often limited. These limitations are often the result of ministry structures which, deliberately or inadvertently, set up political and administrative barriers between units.

Planning units can fulfill important roles in improving coordination and communication between various units implementing plans and with re-planning.

To a considerable extent, planners and planning units can help to overcome these barriers and thus enhance the likelihood of successful implementation. By virtue of its non-executive and usually non-partisan position in the ministry, the planning unit can:

- assist in making, coordinating and unifying plans of units, both within and outside of the ministry of health;
- set up and help to implement a reporting procedure that provides units promptly with feed-back relevant to their plan implementation in areas related to their activities;
- help health care units to analyze particular problems or questions that arise during implementation.

Manpower planners must support those who implement the plan and this role must be sanctioned formally by the ministry.

In this way, the planning unit can make an extremely important contribution to implementation. However, since a planning unit normally has no executive function or authority, the coordination and monitoring roles proposed here for the unit must be formally sanctioned by the ministry. The mechanisms for discharging these functions will also need to be specified.

11.6

WHAT INFORMATION IS NEEDED FOR MONITORING ?

Data must be collected from the several components of the health manpower system.

To monitor health manpower development, data must be collected and analyzed from three different components of the manpower system, viz. training and educational institutions, health care institutions and operational units, and the service administration. The kinds and amounts of information collected must be geared to the capabilities and needs of each of the components.

Data is collected to:

- assess progress toward plan targets and objectives;
- identify discrepancies and their probable causes;
- provide a continuing basis for assessing the validity of established objectives, targets and the means of attaining them.

Much of the basic data needs for monitoring implementation of planned activities has been given in Session 3.

The combination of the several types of information collected can provide the basis for evaluating planned programmes. Session 3 (on data collection) has already specified much of the basic information needed. A brief recapitulation of the primary data components is provided as follows, with particular emphasis on those that bear directly on the monitoring of programmes.

Training institutions will need to keep track of student movements through training.

With regard to training, the need is to keep track of students as they enter, pass through, and leave training institutions, at home and abroad. This enables the training institutions to:

- report on current output of trained manpower;
- modify and improve predictions of future output;
- improve their understanding of the causative and predictive relations between school inputs and outputs as a basis for improving future planning and efficiency.

To make the numerical information useful for predictive purposes, the numbers should be changed into rates. To do so, the numbers will have to be divided by some other number which is a measure of a common characteristic of all students. Usually, this divisor is the number of entering students in each year or other period; this group is termed a "cohort."

For predictive purposes, much of the numerical information should be converted into rates, e.g. rates of attrition, of graduation, etc.

Thus:

$$\text{Graduation rate}^{*} = \frac{\text{Number of students who graduated as planned}}{\text{Number of students who started training in the class that graduated}}$$

These rates, combined with the absolute number of students entering training and in training, provide the means for projecting future graduates.

To determine the factors which have resulted in the current and expected levels of graduate output, other more detailed examinations have to be made. Depending on the circumstances, these could include studies to assess the impact on the rate of graduation and on eventual career development of such variables as age, sex, previous training and experience, and academic performance.

To determine the effects of various factors on training output and performance, special studies may be needed.

To monitor the progress of health service units, different kinds of information are needed. Examples include:

- staff distribution according to region and type of health facility;
- numbers and kinds of services provided per unit of staff time and as a function of the mix of staff types;
- amount of time spent on service activities, on support activities, and on other activities;
- indication of the quality of services;
- amount of post-basic training given, and assessments of the impact of training on performance.

Health service units will need to record data on staff distribution, output and productivity.

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* The terms "graduation" and "graduate" are used in these guidelines in the sense of "successful completion of training" and "one who has successfully completed training," respectively.

To monitor manpower management, there must be records of staff movements in the health system.

Lastly, to monitor administration and management functions the progress of staff into, within and out of the health service must be followed. The kinds of information to collect include:

- number and kind of staff recruited;
- time it takes to recruit staff;
- number, distribution, and characteristics of unfilled staff vacancies;
- number and characteristics of staff who leave, and their reasons for leaving;
- average time needed to complete procedures for establishing new positions, for processing staff appointments, and for assigning new staff to posts.

These factors may sometimes have to be analyzed according to such variables as personnel grade, sex, age, seniority, and full-time/part-time employment.

Evaluation information comes from routine reporting and special studies. Given the high costs and disruptive effects of special data requests, they should be kept to a minimum.

It is anticipated that in many countries much of the information that manpower planners need in order to monitor implementation either will not be available or will be difficult to obtain. In such situations, the planners may need to commission special studies, but these tend to be time-consuming and expensive, and they often disrupt the normal operations of affected units. Accordingly, planners must make few requests for special information and, mostly, they should try to strengthen existing data collection systems as the best means of meeting their long-term needs for information. When special information is needed, planners should try to obtain it on a sample basis and only once.

WHAT EVALUATION IS NECESSARY ?

The planning unit should be sure to budget for adequate staff time to collate, process, and analyze the data needed to monitor implementation of plans if they are to be involved (as suggested earlier) in the monitoring, evaluation and re-planning processes. The time needed will depend on the frequency of plan reviews. At the least, plan programmes should be reviewed when the annual budget is being prepared. But ministries may find that twelve-monthly reviews are too infrequent to keep a plan in line with changing operational and other circumstances. Shorter six-monthly, or possibly even three-monthly, reviews will generally be found more useful. The frequency of reviews will depend on such factors as those mentioned earlier (see page 11.4), the adequacy of the review machinery, and the time it takes for problems to arise and be recognizable.

Planning units should budget adequate time for data management, based on a review frequency appropriate to the ministry's needs.

If the country has well-defined planning periods, two further evaluation procedures, beyond those for the annual and semi-annual reviews, may be considered -- terminal evaluation and mid-term evaluation. These evaluations are more thorough than annual or periodic reviews and are undertaken some time before the end of the plan period or before the mid-point. Since the purpose of these evaluations is to examine in depth the basis of the next plan or changes in the remainder of the plan, they should be completed early enough to allow implementation of the proposals. For example, the terminal evaluation should be completed before the start of preparation of the next plan, which may be in the early part of the last year of the current plan. Mid-term evaluations are optional and more appropriate for review of relatively new programmes rather than those which have been ongoing for a long period. Both these types of evaluation provide an opportunity to explore underlying patterns in the current manpower situation and may be expected to lead to more far-reaching conclusions than the routine reviews.

Terminal and mid-term evaluation of plans provide an opportunity for more "in-depth" assessment than do normal reviews.

In some places, emphasis is being placed on introducing the concept of "rolling plans" or "rolling horizon plans," rather than on fixed-term plans. Every year a new five-year plan is drawn up covering a period one year further on than the previous plan. This concept obviates the necessity of terminal evaluation since planning becomes a real continuing

"Rolling plans" are an alternative to terminal evaluations but require well-developed monitoring and evaluation processes.

process based on annual evaluations. Although it is an attractive concept, it makes a major demand on the resources and time of a planning unit. Moreover, the undertaking of rolling plans depends on the practices imposed on all sectors and is seldom dependent on decisions of the health sector alone. It is not recommended unless the ministry has strongly developed monitoring and evaluation processes.

This session has purposely focussed on the planner's role in contributing to a more effective implementation.

This session has dealt little with the detailed kinds of activities implementation entails. This is intentional because these activities conform very much to national patterns and cannot readily be described in general terms. Moreover, the planner is not likely to be directly engaged in implementation, but rather support it by facilitating communication and coordination between participating units and helping them to collect, analyze and use programme evaluation data. It is these latter activities which provide the cornerstone to more effective implementation.

ILLUSTRATION

UNCERTAINTY ABOUT IMPLEMENTATION AND EXTERNAL EVENTS

Two types of uncertainty exist for decision-makers: development implementation and external events.

The need to update plans, or to re-plan, arises because plans are produded in an environment of uncertainty. The following case study illustrates the dilemma of a ministry in one country as it tried to carry out the planned expansion of district hospital facilities.

- The district is preparing, tentatively, to open a major new hospital in 1987;

Uncertainty about changes in the nurse working situation.

- meanwhile, sometime before 1987, it is anticipated that the working week for nurses and other government staff is likely to be reduced from 40 to 38 hours, and the average patient-stay in hospital reduced also, so that nursing care must become more intensive than it is now, requiring more nurses. Various other small changes are also expected to take place which will alter the requirement slightly.

Uncertainty about new hospital opening date.

- The exact date for the opening of the new hospital is very uncertain. The history of hospital construction in the country suggests that it takes from five to ten years from initial planning to opening; some planned hospitals have never been put into service. Estimated opening dates have often been off by three or more years.

- Nurses working in the hospitals largely come from training schools in the district, although a small but measurable number of nurses come back to the district each year from other districts where they have trained and worked.

- The current nurse staffing situation is not good. The total number of nurses presently in service is just above the minimum acceptable number of staff and is fairly static from year to year but is increasing slightly.

The implication of the uncertainties is widely differing staffing requirements.

The situation is fraught with uncertainty for decision-makers in the ministry. Figure 11.2 depicts what the possible future needs for nurses look like. Four lines of projection are shown which represent the following:

- the minimum requirement if none of the expected changes in the nursing situation, including the new hospital, occurs;

- a modified minimum requirement if all the expected changes take place;

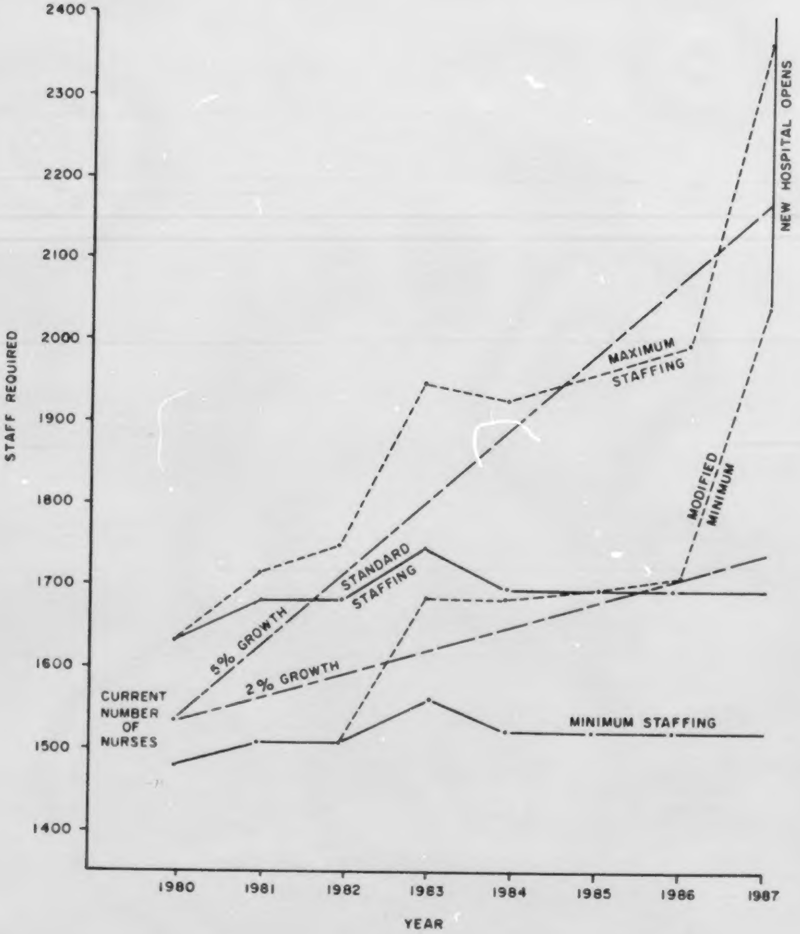
- the normal requiremnnt for nurses to meet the accepted standards of nursing, but with no allowance for the expected changes in the nursing situation; and

- the maximum requirement if all the expected changes take place and the hospitals are staffed at the accepted standard.

Decision-makers under pressure to ensure jobs for locally trained nurses.

The pressure on the ministry is considerable because, in the first place, as most of the nurses coming into training in the district also come from the district, it is expected that jobs will be available for them after graduation. It is

Figure 11.2. FUTURE STAFFING NEEDS FOR NURSES



thus essential that the strategy decided on does not lead to over-production.

Secondly, the longer the delay in taking action, particularly in regard to expanding the training facilities, the bigger the increase in training facilities will have to be. The risk in doing this is that, once the new hospital has been staffed and it becomes simply a matter of replacing leavers, the district is likely to have on its hands substantial unused facilities for which they will have made a considerable investment

Decision-makers cannot risk delaying too long in expanding training facilities.

Thirdly, if the hospital does open on time, it would be a source of major criticism from the public and elsewhere if the ministry were unable to staff the new facilities.

Figure 11.2 depicts not only the projections of the various uncertainties discussed earlier, but also shows two projected supply curves of the many that could be made. In brief, if there is a 2% or even a 3% growth in the supply of nurses and the hospital opening is delayed, there will be little risk; but if the hospital opens on time, a major shortage will result. If, on the other hand, there is a 5% growth, there will be enough nurses for the new hospital, but if its opening is delayed, the surplus of nurses could be substantial.

Each plan for increasing the supply of nurses has some risks attached to it.

The general view of the ministry was that expansion in supply through expansion of the training facilities should not be the only approach adopted. Other possibilities should be tried, such as attempting to attract more nurses to the district from elsewhere or encouraging ex-nurses living in the district to come back to work, and so on. However, little was known about how productive these other approaches would be or what was entailed in putting them into operation. The ministry decided, therefore, to commit itself immediately to an expansion of the training school which would lead to an effective 2% growth in staff and, at the same time, commission an investigation to provide it with information on

Decision was to start limited expansion of training while investigating other alternatives.

the other possibilities. The whole situation was to be reviewed one year later.

Plans are always built on uncertainties and, for this reason, frequent reviews and replanning are essential to effective implementation.

This illustration need not go further into the details of the extensive efforts made to clarify the uncertainties and explore the effects of adopting such growth strategies. What is important is to stress that, while every effort should be made in initial planning to reduce uncertainty, it is not always possible to do so. For this reason, planners and decision-makers must keep the staffing position under review and re-plan as necessary to minimize imbalances between the supply of staff and the need for them. In this particular situation, a decision was made to increase the training capacity of nurses by 2% and wait for more information. Of course, it is not yet known whether this was the right decision or not.

REFERENCES

1. Abel, P., Farmer, P., Hornby, P., Hunter, M.H.S., and Shipp, P.J. Practical manpower planning for nurses. Nursing Manpower Planning Report No. 2. Edinburgh, Scotland, Scottish Home and Health Department, 1974 (Report No. 34883).

2. Andrade, J. Participation and responsibilities in health manpower planning: the case of Venezuela. Washington, D.C., U.S.A., World Health Organization Pan American Health Organization (PAHO), 1973 (Document HR/CPP/D/6, 9 pp.).

EXERCISES

EXERCISE 1. Nurse Staffing - Coping with Uncertainty

Consider a situation similar to that discussed in the illustration, but in your own country. Assume you are the principal decision-makers and that it has been determined that the exact date of the opening of a large new hospital will not be known until about one year before it opens. What actions, both short- and long-term, would you recommend? In particular:

- what decisions would you make about the size and timing of changes in manpower training and recruitment, during the intervening years?
- what sources of new staff would you use and not use?
- what information would you need in order to make the decisions and when? If your decisons are proved to be wrong, how would you use the surplus staff or rectify the shortages, as the situation may turn out?
- what arguments and what criteria would you use to support these decisions?

EXERCISE 2. Coordinating Re-planning

If the ministry of health in your country decided to strengthen the coordination of re-planning for manpower, suggest:

- what information should be collected with what frequency and why?
- which organizational units should undertake:
  - data collection,
  - data analysis,
  - preparation of a basis of revised plans?

- how the units undertaking these activities would be coordinated within the normal chains of command?
- how long would it take to go through a normal re-planning cycle, and how should this be fitted into the annual budgetary review and allocation process?

EVALUATION QUESTIONNAIRE FOR SESSION 11

Date ____________________________

The following questionnaire is intended to obtain your frank and honest opinion about the session you have just attended. This will help us in improving the material and the exercises of the course. Do not hesitate to give negative responses.

1. Do you feel that you achieved the educational objectives listed at the beginning of the session? The objectives were for the participants to be able to:

	Not at all	Poorly	Fair	Well	Very well
1. Identify the major types of uncertainty which lead to the need for re-planning.	☐	☐	☐	☐	☐
2. List at least three important planning unit functions to help implementation.	☐	☐	☐	☐	☐
3. List three components of the manpower system that will need monitoring during implementation.	☐	☐	☐	☐	☐
4. Specify what evaluation and review is necessary to ensure effective implementation.	☐	☐	☐	☐	☐

2. Did you read any of the learning material before the session?

Not at all	A little	A fair amount	Most of it	All of it
☐	☐	☐	☐	☐

3. Was the learning material:

	Not at all	Somewhat	Fair	Moderately	Very
a. useful for doing the group work exercises?	☐	☐	☐	☐	☐
b. easy to understand?	☐	☐	☐	☐	☐
c. interesting?	☐	☐	☐	☐	☐

	Not at all	Somewhat	Fair	Moderately	Very
4. Did you find the illustrations:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant?	☐	☐	☐	☐	☐
5. Did you find the exercises:					
a. easy to understand?	☐	☐	☐	☐	☐
b. interesting?	☐	☐	☐	☐	☐
c. relevant to national issues:	☐	☐	☐	☐	☐

	Too little	Less than needed	About right	More than needed	Too much
6. Did you find the time allocated					
a. for presentation of the learning material:	☐	☐	☐	☐	☐
b. for exercises:	☐	☐	☐	☐	☐
c. for plenary discussions:	☐	☐	☐	☐	☐

	10	20	30	40	50	60	70	80	90	100
7. If you were organizing this session, what percentage of time would you allocate to:										
a. presentation?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. exercises?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c. plenary discussions?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Note that the percentages allocated to each activity when added up should equal 100 percent.

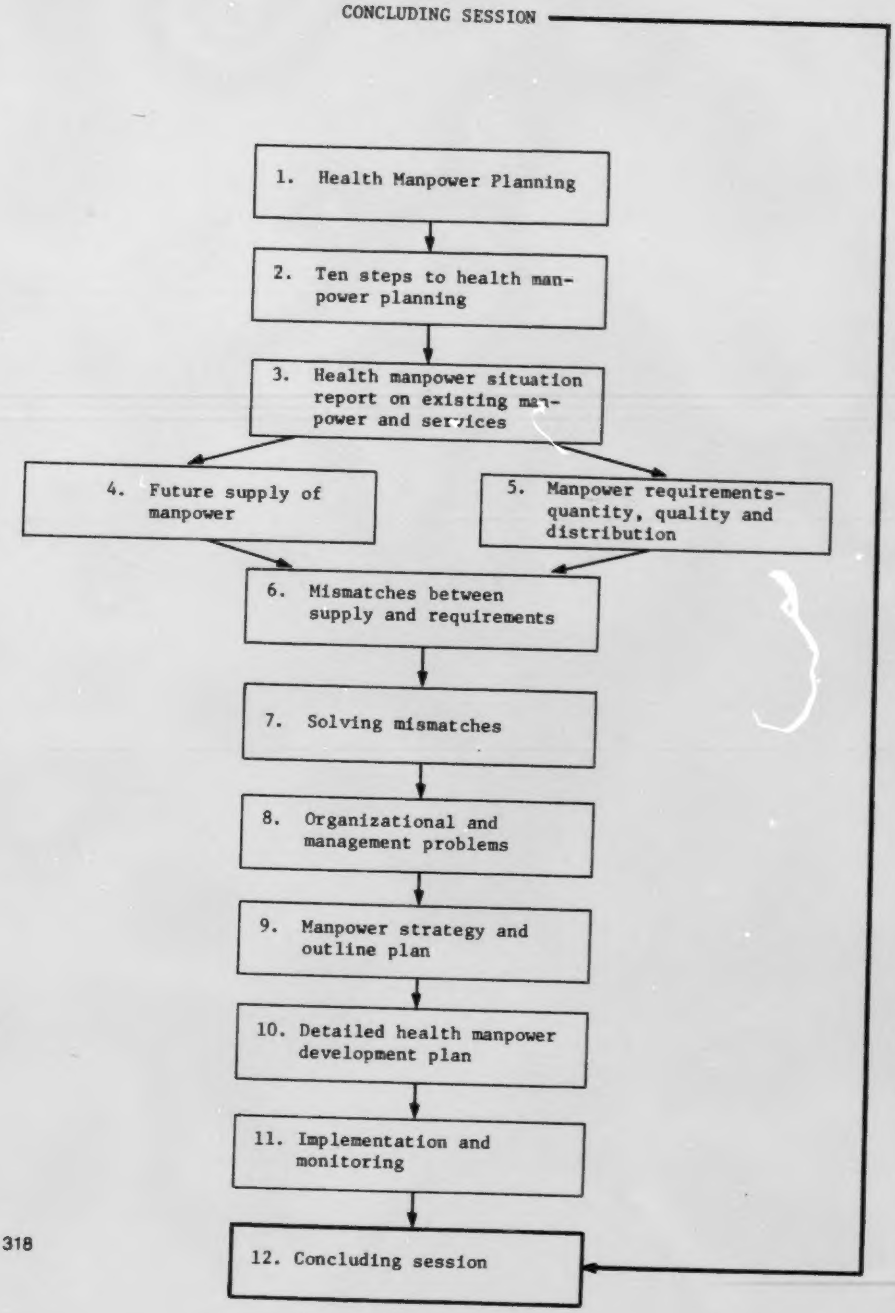
8. Do you have any other comments?

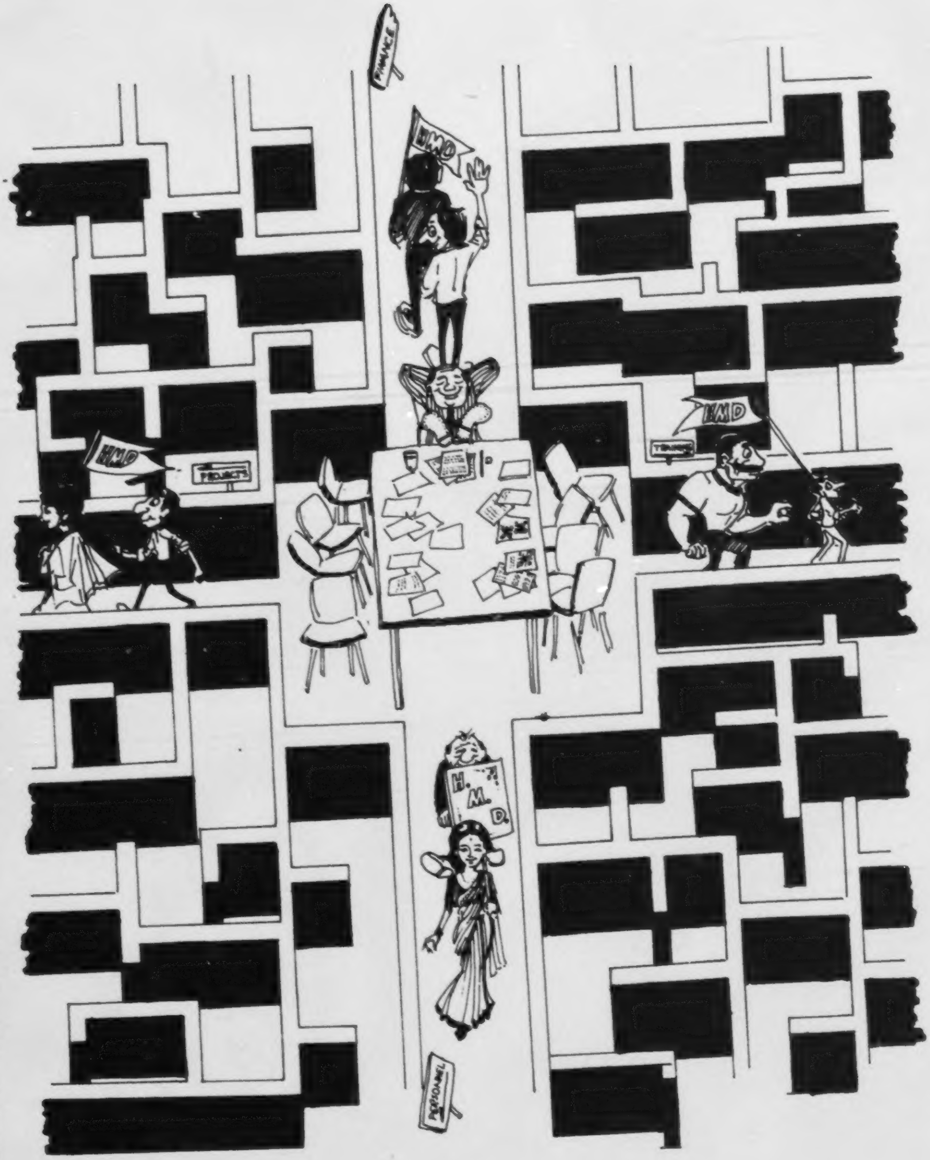
Name ______________________________

There is no need to sign your name unless you wish to do so. Thank you.

SESSION 12

CONCLUDING SESSION


CONCLUDING SESSION
1. Health Manpower Planning
2. Ten steps to health manpower planning
3. Health manpower situation report on existing manpower and services
4. Future supply of manpower
5. Manpower requirements-quantity, quality and distribution
6. Mismatches between supply and requirements
7. Solving mismatches
8. Organizational and management problems
9. Manpower strategy and outline plan
10. Detailed health manpower development plan
11. Implementation and monitoring
12. Concluding session


FINANCE
HMD
HMD
PROJECTS
HMD
H. M. D.
PERSONNEL

HMD MARCHES ON!

SUMMARY

The ten procedural steps in health manpower planning discussed during the workshop are intended as a guide for planners and are not to be rigidly followed. In this Session, the need and freedom to change both the contents and sequence of the steps to suit local conditions is stressed.

The necessity for having a broad base of involvement in the health manpower planning process is also emphasized. In particular, the place of decision-makers, programme managers, and planners in the process needs to be planned for and, in the case of planners, a continuing role in implementation should be established.

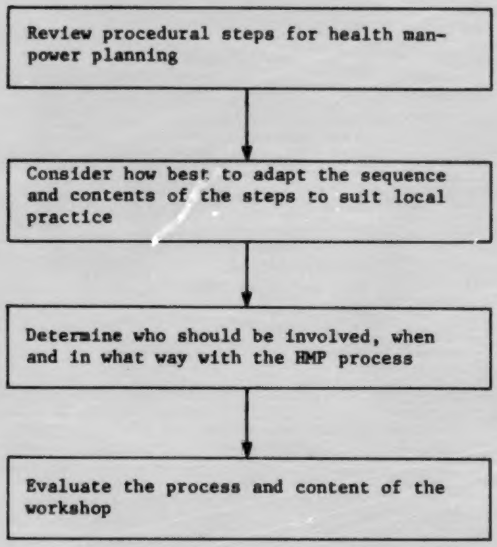
The introduction of manpower planning does not need to be delayed until an array of technical skills is available. It should be introduced as soon as possible, together with an organizational focal point for manpower planning in the ministry. From this beginning, a well-developed health manpower programme can be expected to emerge.

EDUCATIONAL OBJECTIVES

At the end of this session, participants should be able to:

1. Recapitulate the procedural steps involved in health manpower planning.
2. Indicate how the procedure should be adapted for their own country.
3. Organize a health manpower planning activity.

SESSION STRUCTURE



Review procedural steps for health manpower planning

Consider how best to adapt the sequence and contents of the steps to suit local practice

Determine who should be involved, when and in what way with the HMP process

Evaluate the process and content of the workshop

LEARNING MATERIAL

HOW SHOULD THE SESSION MATERIALS BE USED ?

Procedural steps in health manpower planning should be adapted to individual country circumstances.

In the previous sessions, a set of ten procedural steps for health manpower planning were presented; they are designed to guide planners rather than to be rigidly followed. The steps themselves represent necessary elements in the manpower planning process. However, the sequence in which the steps are undertaken, as well their contents, have to be adapted to the needs and circumstances of individual countries. This adaption will reflect both the planning machinery and information available for manpower planning, as well as the type of problems posed and the solutions possible. Some countries, for instance, may not need to adapt long-term solutions to accommodate short-term issues, while others will find their planned actions heavily constrained by the need to satisfy short-term problems in preference to long-term goals. The manpower planning working group in each country will have to decide how best to modify the approaches set out in these guidelines to meet the country's situation and needs.

The question posed is what changes in the steps should be made to suit local planning practice.

There is no need to recapitulate in detail in this session on the individual steps involved in the manpower planning process. They are explored at some length in Session 2 and participants are invited to refer back to the contents of that session to refresh their memories. The issue at this point is how these steps should be modified to make them appropriate to local planning practices.

The process of manpower planning involves four basic elements.

Health manpower planning breaks down into four basic elements. These are:

- determining future staff availabilities;
- determining future staff requirements;

- comparing staff availability and requirements and determining solutions to resolve any incompatibility;
- drawing up an operational plan for implementing the solutions.

The logical processes to achieve the objectives of the four elements should be adjusted to suit local styles.

The protocol developed through this course has been designed to outline the steps by which the objectives of the four elements can be achieved. The stress is on the development of a systematic approach in order to be able to come to a clear understanding of what is in general a very complex set of issues. Individual manpower planners may find that the logical processes within particular steps need to be modified to suit their own styles of approach. At the same time, the extent and quality of analysis may also have to be changed to conform to the information available and current management style.

The sequence of the steps may also be changed to accommodate local decision-making processes, as the planning process is cyclical.

The question of the sequence of the steps in the process also merits consideration. The cyclical nature of planning has been stressed repeatedly; procedures may have to be repeated many times before a satisfactory and feasible plan is produced. This will involve the manpower planner in moving back and forth between different steps, searching for ways to adapt to the constraints of budget, technologies, and other resources. For this reason, the manpower planner is relatively free to create a sequence to the steps which best suits the way in which the ministry sets about planning and decision-making. Wherever the manpower planner starts, he will inevitably have to cover all the steps in the process.

WHO SHOULD BE INVOLVED IN THE MANPOWER PROCESS ?

Manpower planning should have a broad base of involvement.

Unless it has a broad base of involvement, manpower planning must necessarily fail because relevant officials in the ministry are not committed. It is important, therefore, at an early stage in the manpower planning process to determine who besides the manpower technicians should be involved and in what way. It was suggested, for instance, in Session 9 that as a procedural step decision-makers should be presented with an outline plan. This plan was to be fully discussed and modified as necessary before proceeding to the detailing of the plan. The involvement of the decision-makers at this point is a deliberate choice because, in the first place, they are concerned primarily with principle and not with detail and, in the second, because their agreement and support is essential before committing time and resources to producing a detailed plan.

Decision-makers should be involved, particularly at the stage of the outline plan.

In similar fashion, to ensure successful implementation, it is essential that the prospective managers of the programmes are involved in the planning process, and the most significant involvement should occur at the stage of preparing the detailed plan. In this way, the programme managers become fully involved in specifying the detailed activities necessary, the resource needs, and the required schedule of operational events covering the immediate future.

Programme managers should be involved, particularly at the detailed planning stage.

Planners for their part should assist not only in the planning activity but also go on to participate in the implementation. Their roles will primarily be those of monitoring plan implementation and helping to identify obstacles. They should maintain contact with the people and the institutions responsible for implementation. Planners will thus be in a position to make timely revisions. A long-term plan, unmodified, may well become seriously outdated in only a few years and serve little purpose as a management guide.

Planners should extend their involvement beyond planning into implementation.

It has been emphasized that manpower planning is not merely the production of a plan, but rather an effort which has as its end-products better decision-making, better allocation of resources, and a more efficient pursuit of objectives. Manpower policies result from the interplay of forces, institutions, and people and depend on the timeliness of specific proposals. Thus the

Manpower planning has much wider implications than simply the production of a plan document.

planner must be able to propose and promote a plan, the contents of which will facilitate adoption and implementation. He fails in his obligation if he sees himself as only a technician who provides information.

The quality of planning depends as much on commitment as it does on technical skills.

The procedural steps proposed in this guide will not give automatic results or self-evident solutions. Ultimately, the solutions to health manpower problems will depend on the ingenuity of those responsible for health manpower planning and their ability to engage other interests in the process. Planning is difficult and success depends on the seriousness and enthusiasm of those involved.

WHAT NEEDS TO BE DONE ?

Manpower planning does not have to wait for fully developed planning skills to start.

Health manpower planning is an important complement to health planning since investment in human resources contributes greatly to national development. These Guidelines have been concerned more with the promotion and propagation of planning than with specific planning techniques that can be applied everywhere. It is much more important to begin planning early, however modestly, than to wait until a full-scale effort, with the "best" planning methods available, is possible.

Whatever manpower plan is developed, it must be reviewed, evaluated and modified at regular intervals.

Review and periodic evaluation of manpower plans should also occur over time as implementation proceeds. The long-term master plan for manpower will define broad areas of activities with more detailed plans of action specified for the near future. There will be sufficient uncertainties about the future that a detailed specification of activities for the later years of a plan period will be of little use. The later stages of the plan period are covered only in sufficient detail to indicate feasibility of the plan targets and the resource requirements to achieve the targets. The activities and budget for the next year or biennium, on the other hand, are specified in sufficient detail for the execution of the plan.

Skilled manpower is the most important resource which a health service has. It is also the most difficult resource to control and utilize over a long period of time to the best advantage of health and health care in the country. For this reason if for no other, the ministry must not only prepare plans for manpower but must also provide a clearly defined focal point within the ministry through which a continuous overview of manpower policies and practice can be maintained.

The ministry needs to provide a focal point for a continuous overview of manpower policies and practice.

EXERCISES

EXERCISE 1. Organizing Health Manpower Planning

In Exercise 2 of Session 2, you were asked to undertake the following activities:

(a) Draw up the terms of reference of the HMP working group.

(b) Identify the institutions, organizations or agencies which should be represented in the group. State why.

(c) Specify what other organizations or institutions the HMP working group should contact and for what reasons. Specify the extent and nature of the interactions.

(d) Identify who should constitute the Steering Committee.

(e) Draw up a planning schedule, including the approximate duration of each of the steps.

In view of the experiences gained during the workshop, some changes in your perspectives may well have taken place. In this exercise you are therefore asked to do the following:

1. Re-examine the terms of reference of the HMP working group and modify them as necessary.
2. Review the steps of health manpower planning and re-arrange their sequence in an order which would seem most appropriate to meet local styles of planning and decision-making.
3. List the organizations, institutions and offices whose involvement is deemed desirable for each separate step and specify the type and extent of the required involvement.

Where possible, explain the reasons for any differences in the proposals made here to those made in answer to Exercise 2, Session 2.

EXERCISE 2. Health Manpower Recommendations

In view of the main health manpower problems that you have identified during the course of this workshop,

> draw up a list of broad recommendations for dealing with them which would be suitable for submission to the Ministries of Health and/or Education.

EXERCISE 3. Workshop Evaluation

A plenary session will be allocated to a discussion of the workshop. For this purpose,

> please complete the end-of-course questionnaire and prepare additional notes on the running of the workshop and the course content which you feel may lead to an improvement of the workshop as an instrument in learning about health manpower planning.

END-OF-COURSE QUESTIONNAIRE

Course held from ______________________________ to ________________________________

in ____.

This questionnaire is designed to assess the results of the course and to enable us to improve it. So that the course coordinator can give you the results of the evaluation, please complete the questionnaire and hand it in at the end of the second last day of the course. Again, please be honest with evaluation and do not hesitate to include negative comments. Of course, any constructive comment to improve the course will be very welcome. You are not required to identify yourself in this questionnaire.

A. In the first part of this questionnaire, the same questions are posed on manpower planning as were asked in the Pre-Course Questionnaire. The purpose of this is to establish the extent to which your views and knowledge about health manpower planning have changed.

1. Please read the following statements about the purpose of manpower planning. Check the appropriate column for which of these statements you feel are TRUE, which FALSE and which you DO NOT KNOW.

The purpose of health manpower planning is to:	TRUE	FALSE	DO NOT KNOW
a. Control the cost of training health manpower	☐	☐	☐
b. State exactly how many people at each skill level will be required in the future	☐	☐	☐
c. Train a group of people to guide the legislature to make wise decisions about health service extensions	☐	☐	☐
d. Help ministers and directors of health to justify the cost of health service personnel	☐	☐	☐
e. Reduce the number of people working in the health service	☐	☐	☐
f. Create a separate and independent training system for health staff	☐	☐	☐

2. Amongst the following statements are some which describe the effect of a LACK of health manpower planning. Identify them by putting a check in the appropriate box.

A lack of health manpower planning leads to:	YES	NO	DO NOT KNOW
a. Health institutions with insufficient staff to provide planned services	☐	☐	☐
b. Not enough equipment in the services to meet requirements	☐	☐	☐
c. Majority of the health needs of the population being unmet	☐	☐	☐
d. Staff working in posts for which they are not trained or qualified	☐	☐	☐
e. Inadequate budgets in health training institutions	☐	☐	☐
f. Dissatisfaction among health personnel because of blocked or uncertain careers	☐	☐	☐

3. There are a number of different methods to determine how many staff will be needed in the future. Ultimately all these methods can be grouped into one or other of the principal methods. How many principal methods of determining future staff requirements are there? Please put a check in the appropriate box.

1	2	3	4	5	6	7	8
☐	☐	☐	☐	☐	☐	☐	☐

4. To solve mismatch problems between the supply and requirements for staff, the nature of the problem presented needs to be identified under one of five basic problem area headings such as:

   1. The total number of staff employed
   2. The skills/knowledge of staff

   Please list the three other problem area headings:

3.	
4.	
5.	

5. To monitor progress in terms of a health manpower plan, information is needed from three separate organizational entities, both within and outside the ministry. Can you name what these are in general terms?

1.	
2.	
3.	

B. In the second part of this questionnaire, your views are invited on the course itself. For many of the questions, a scale is provided to give you a range between a very negative (1) and a very positive (6) reaction from which to state your feelings. Please check the appropriate box.

1. In general my feelings about the daily sessions were as follows:

Understanding of introductory presentation was:

Difficult					Easy
1	2	3	4	5	6

Illustrations/examples used in presentation were:

Unclear					Clear
1	2	3	4	5	6

Not relevant					Relevant
1	2	3	4	5	6

Work exercises were:

Difficult					Easy
1	2	3	4	5	6

Too long					Too short
1	2	3	4	5	6

Not relevant					Relevant
1	2	3	4	5	6

In the plenary discussions,

presentations were:	Confused	1	2	3	4	5	6	Clear
time taken was:	Too short	1	2	3	4	5	6	Too long
interest was:	Boring	1	2	3	4	5	6	Very interesting
usefulness was:	Not useful	1	2	3	4	5	6	Very useful

2. My view of the course as a whole was as follows:

Number of participants was:	Too many	1	2	3	4	5	6	Too few
Work required of participants was:	Too much	1	2	3	4	5	6	Not enough
Participant interest was:	Very low	1	2	3	4	5	6	Very high
My knowledge increase was:	None	1	2	3	4	5	6	Very much
My skill increase was:	None	1	2	3	4	5	6	Very much

	Very poor					Very good
Physical arrangements were:	1	2	3	4	5	6

3. Improvements suggested:

	INCREASE	DECREASE	NO CHANGE
Faculty	☐	☐	☐
Daily introduction	☐	☐	☐
Illustrations/examples	☐	☐	☐
Reading preparation	☐	☐	☐
Workshop time	☐	☐	☐
Group work	☐	☐	☐

	Not much					A lot
4. Do you now feel that your competence to actively participate in HMD activities has changed?	1	2	3	4	5	6

	Unlikely					Definitely
5. Do you think that your participation in HMP in your country will continue?	1	2	3	4	5	6

	Not much					A lot
6. Has your confidence to collect, analyze and interpret data necessary for HMP changed?	1	2	3	4	5	6

7. Any other comments:

BIBLIOGRAPHY

LIBRARY
METHODS
DEMAND
SUPPLY
TASKS
UTILIZATION
MODELS
ORGANIZATION
FICTION
HISTORY
REFERENCE

OTHER INFORMATION

INTRODUCTION

The following annotated bibliography is included to provide readers with other sources of information on manpower planning activities. The references are drawn from a fairly wide survey of available material. It is not intended to be a comprehensive list, but rather to provide a reasonable range of other sources of experience in this field. There is a large body of writings on manpower planning, but much of it relates very specifically to developed countries in which a well-established planning function exists with the necessary machinery to support sophisticated approaches to analysis.

This bibliography is intended to concentrate around methods applicable to developing countries and where possible we have shown actual work done in these countries. At the present time, little published work is appearing from the developing world in this field and it is hoped that this guide will be one more source of stimulation to developing both national skills and to contributing experience and expertise for a wider consumption.

The bibliography is divided into eight sections as follows:

- Manpower Planning Reviews
- Manpower Planning Methods
- Manpower Demand Projections
- Manpower Models
- Manpower Supply and Surveys
- Utilization of Staff
- Task Analysis
- Organization of Manpower Planning

The material of the bibliography is grouped appropriately under these various headings, but, in many cases, the work reported projects beyond the particular group in which it has been located, and touches on a number of other areas in the manpower field. In these cases, the assignment to a specific category has been made because the material makes some particular contribution in that area.

In a great many cases, the references cited will be unobtainable in a country and for that reason, we have given addresses of journals and pamphlets (in the first reference cited, if there is more than one) so that they can be sent for if required. In the case of books, we have assumed that they can be obtained through the usual channels, i.e. libraries or bookstores.

REVIEWS IN HEALTH MANPOWER PLANNING

1. Butter, I. Health manpower research: a survey. Inquiry, 4(4):5-41 (1967). (c/o Blue Cross Association, 840 N. Lake Shore Drive, Chicago, Ill. 60611, U.S.A.)

This is a review of the health manpower planning literature, with an extensive discussion of projections of manpower requirements. It addresses itself to four questions:

(1) In view of substantial growth, why are there still manpower shortages?
(2) What increment in growth of health manpower would have been needed to avoid the alleged current scarcities and were these growth rates foreseen?
(3) What are the problems related to estimating demand and supply and how can discrepancies between them be measured?
(4) What is the likelihood that the health manpower requirements of the future will be met and what is the role of government policy in altering both requirements and supplies?

The paper concentrates on two disciplines -- economics and operational research -- with the emphasis on the former, as only a limited number of quantitative studies have been developed. The focus, therefore, is on adopting from economics a conceptual framework and the analytic tools needed for future research. The author presents a schematic framework for research in terms of which the field of literature is reviewed. Demand and supply, their measurement, determinants and interaction are examined, followed by a discussion of health manpower policy and legislation as possible reinforcements or substitutes for private market mechanisms.

2. Department of Health and Welfare. Canadian health manpower studies: a selected bibliography, 1974-75. Ottawa, Canada, Ministry of National Health and Welfare, 1975 (11 pp.).

As a comprehensive and systematic reference to the major Canadian literature in the health manpower field, this selected, annotated bibliography is meant to facilitate the exchange of information about health manpower activities between researchers, educators, planners, government officials, etc. The selection of references dates from 1964, the year of the Hall Commission Report. The references are arranged into five sections: organization and planning; information and planning; supply, requirements and distribution; education; and productivity and utilization.

3. Gish, O., ed. Health manpower and the medical auxiliary: some notes and an annotated bibliography. London, Intermediate Technology Development Group, 1971 (65 pp.). (9 King Street, London, WC 2, England)

Intended as a guide for planners and administrators, this volume presents the rationale for using intermediate and auxiliary personnel in the developing world. An annotated bibliography of 134 items is divided into three parts: health planning, health manpower, and related published items.

4. Hall, T.L. and Mejia, A., ed. Health manpower planning: principles, methods, issues. Geneva, World Health Organization, 1978 (311 pp.)

Health manpower planning is defined as the process of estimating the number of persons and the kinds of information, skills and attitudes they need to achieve predetermined health system and health status objectives. The goal of planning is to ensure provision of the most economical combination of manpower. The stages of the planning process are described, with stress on the need to consider the predetermining socio-political dimension.

The major information categories potentially relevant to health manpower planning are data on demographic characteristics, economics, health status and needs, use of health services by the population, the health manpower supply, the health system and manpower utilization, health manpower training and health manpower planning in the national context.

Chapter Two considers the planning environment -- the scope and organizational context. The three basic sub-processes -- planning, production and management -- and their inter-dependence are described, with identification of the areas of overlapping interest.

Four methods of estimating demand are studied in Chapter Three: health needs, service targets, economic demand and manpower/population ratios. The author concludes with questions to be posed when selecting a planning method, including consideration of feasibility, cost and the unpredictable.

Chapter Four investigates methods of supply data compilation which allow the planner to convert any manpower supply target into several alternative pathways which involve differing assumptions regarding factors affecting supply.

Chapter Five analyzes productivity, considered as a function of the efficiency of providing health services and, indirectly, of their utilization.

Chapter Six is devoted to educational programmes, whereas Chapter Seven examines the manpower maldistribution. Once the planner has quantified inequalities, he must determine to what extent the structure and organization of the existing health care system will allow for improvements. An alternative approach to meeting basic health needs in developing countries is to provide primary care to the entire population at an expenditure consistent with national resources; the basic element should be small health units linked to a referral and support system and staffed by non-professionals trained to apply simple technology. Chapter Eight is devoted to this basic issue.

Chapter Nine examines the planning aspects of specific manpower categories (nurses, midwives, family planning personnel, dental personnel, environmental health personnel).

International migration of health manpower is analyzed in Chapter Ten, economic aspects of planning in Chapter Eleven, and the relationships between planning and the political process are studied in Chapter Twelve.

5. Hashimoto, M. Studies and planning of health manpower in Japan. Bulletin of the Institute of Public Health (Tokyo), 19(4):263-268 (1970). (Library of the Institute, 6-1, Shirokanedai 4 chome, Minato-Ky, Tokyo, Japan)

During the last decade, health needs and demands in Japan have expanded greatly, both for quantity and quality, creating serious manpower supply problems. The author presents statistical data on social change and the availability of manpower. After describing the organizational framework that deals with manpower planning and sources of information on manpower statistics, the author observes trends in health manpower studies since the war, providing examples of studies according to the method used.

6. Hornby, P., Mejia, A., Ray, D.K. and Simeonov, L.A. Trends in planning for health manpower. WHO Chronicle, 30 (11):447-454 (1976). (WHO, 1211 Geneva 27, Switzerland)

International developments in health manpower analysis and planning are reviewed. The discussion opens with the description of a simplified framework within which the planner can develop year-by-year comparisons between the demand for manpower and the likely supply.

A review of the development of manpower planning throughout the world reveals two basic types of study relevant to health manpower problems. The first type -- the manpower study -- seeks to improve the quality of information about manpower and is usually carried out on a large scale. The second type -- the study of the manpower planning process -- uses available information to improve analytical and decision-making processes in health service management. The information-oriented study became popular in the 1960's and was carried out in several World Health Organization member states. Manpower studies and studies of the manpower planning process usually are conducted exclusively of each other, particularly in developing countries.

The differences between the two approaches are illustrated in descriptions of a manpower study carried out in Sri Lanka and of a process-oriented study of rural water supply and sanitation personnel.

Lessons to be gained from experience in manpower planning are summarized, including the complex, country-specific nature of manpower problems and the need for a multi-disciplinary approach to manpower planning.

7. Maynard, A. and Walker, A. Medical manpower planning in Britain: a critical appraisal. Social and Economic Administration, 11(1) (1977). (Now Social Policy and Administration, 108 Cowley Rd., Oxford, England)

The authors survey the deliberations in the field of medical manpower forecasting by public committees and private individuals over the last four decades. These include the Goodenough Committee (1944), the Williuk Committee (1957), the Pilkington Commission (1960), Lafitte and Squire (1960), the Platt Commission (1961), Paige and Jones (1966), and the Todd Committee (1967). They compare forecasts with actual outcomes: "All the forecasters came to different conclusions and each of the conclusions bears little relationship to the outcomes."

In the last section, the authors critically evaluate potential improvements that could be made in forecasting procedures for physicians in the U.K. National Health Service. An abridged version of this article was published in Lloyds Bank Review, July 1977, under the title, "Too many doctors?"

8. Pan American Health Organization and the Government of Canada. First Pan American Conference on Health Manpower Planning, Ottawa. Washington, D.C., U.S.A., PAHO, 1974 (PAHO Scientific Publication No. 279, 128 pp.).

The papers presented at the Conference were: R. Villarreal, "Human resources for health in the Americas"; W.H. Hacon, "The health manpower situation in Canada"; J.R. Evans, "Health manpower issues and goals in Canada"; J. Andrade, "Health manpower planning in Latin America: problems and prospects"; W.A. Librand, "Problems and objectives of health manpower planning in the U.S.A."; T.L. Hall, "Where do we stand with estimating requirements and supply?"; R. Cibotti, "An economist's view of manpower planning instruments"; E. A. Confrey, "Action priorities in developing health manpower planning"; and "Priority actions for health manpower planning in Latin America."

9. Waheed, M. Health manpower in a developing economy: India, a case study. Indian Journal of Public Health, 17(2):53-61 (1973). (Indian Public Health Association, 110 Chittaranjan Avenue, Calcutta 700012, India)

This study analyzes India's health problems and disease patterns, identifying the current and future supply of medical personnel and the demand for their services. The following data are set forth in six tables: estimated vital statistics (crude birth rate, crude death rate and morbidity) for 1951-2001; population per doctor, per paramedical and per in-patient for 1951-2001; estimated demand for doctors in the private and public sectors; estimated demand for nurses according to bed, population, doctor and health expenditure ratios; anticipated need for, and supply of, beds in 1968-69; and the actual and projected amounts spent for medical and public health, 1960-81. Findings show that an inadequate supply of medical and paramedical personnel has severely hampered improvement of the health services.

10. Wolstenholme, G.E.W. and O'Connor, M., ed. Teamwork for world health. London, Ciba Foundation (Churchill), 1971 (242pp.). (41 Portland Place, London, W1N 4BN, England)

This is a collection of papers presented at an international symposium on health manpower and teamwork. Baker's paper, "Paramedical paradoxes - challenges and opportunities," is a good discussion of the imbalance between health manpower structures and the generally agreed need to utilize middle-level cadres. In "Expanding the rural health services in the People's Republic of China," Horn emphasizes the re-distribution of health resources, the training of new cadres, de-professionalization, the combination of theory and practice, and, above all, enthusiasm and motivation. Bibliographies are provided for each chapter.

11. World Council of Churches. Provision of basic health services for the deprived: health manpower training for basic health services. In: Christian Medical Commission, Annual Meeting 1974. Geneva, 1974 (pp. 20-26).

This paper surveys the problems that permeate health manpower planning and training in developing societies. It proposes solutions and suggests strategies for implementing them. Primarily, the problems arise because (1) present planning procedures do not consider the society's health needs; (2) financial and teaching resources are not appropriately distributed; (3) student selection policies are not equitable; and (4) present teaching methods do not foster community-oriented health care.

To solve the problems, the community's health needs should be surveyed, and the community itself should help decide its health priorities. New training programmes should then be geared to those priorities, and present training programmes for sophisticated health workers should be cut back to provide adequate training resources (both human and financial). The community should also participate in setting student selection policies (quota systems, etc.) to ensure that the students represent the population served. Finally, the teachers, as well as teaching methods, should be chosen in part for their ability to encourage openness and cooperation among students and the community.

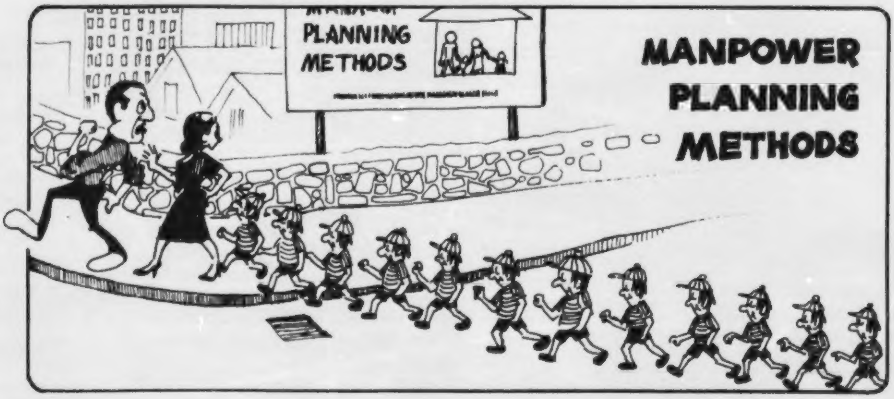
12. World Health Organization. The development of studies in health manpower: report of a WHO Scientific Group. Geneva, 1971 (WHO Technical Report Series No. 481, 64 pp.).

This report presents an appraisal of methods used, analysis of the functions of various categories of public health personnel and study of matters relating to the projection of manpower requirements. The roles and functions of members of the health team are dictated more often by tradition or empiricism than by a planned operation leading to a clear definition of functions and responsibilities. Health manpower planning is defined as the process of estimating the quantity and type of knowledge, skills and abilities required for a health system. The goal is to provide the most economical combination of health workers. Health needs, supply, and manpower requirements are projected, imbalances detected and corrective policy formulated. The availability of health manpower is influenced by two sets of factors: (1) those affecting supply, such as recruitment, selection, training capacity, relevance of education, attrition, career structure and licensure; and (2) those related to use, such as number and categories, organization, technological change, definition of roles and tasks, mobility and incentives, all of which govern retention and productivity. Four main methods of estimating manpower requirements are reviewed: population ratios, service target-setting, health demands and health needs. Two other methods are also discussed: functional analysis and the use of models.

13. World Health Organization Regional Office for Europe. Methods of estimating health manpower: report on a symposium (Budapest, 1968). Copenhagen, 1969 (Document No. EURO 0289, 141 pp.).

This symposium on health manpower planning studied a variety of factors influencing manpower requirements: demographic characteristics of health workers; sociologic dimensions; and the organization of health care, including policies determining productivity, substitution, technology, and the interaction of education and manpower planners.

Eight papers are appended to the report, including a particularly useful study by H.E. Klarman, entitled "Economic aspects of projecting requirements for health manpower." The other papers are as follows: J.D. Cottrell, "Health manpower planning in Europe"; A. Ojala, "The medico-social aspects of health manpower estimation"; J.H.F. Brotherston, "Educational aspects of health manpower planning"; I.D. Bogatyrv, "The significance of morbidity and demographic factors in establishing health manpower requirements"; J.A.C. de Kock van Leeuwen, "Some social and emotional aspects of health manpower planning"; J. Dessau, "The present status of methods for predicting requirements for health personnel and ways of improving them"; and V. Maillart, "Nursing aspects of health manpower planning." A bibliography is included (Document No. 0289/4).



14. Aspen Systems Corp., ed. Health manpower planning process. Washington, D.C., U.S.A., Department of Health, Education and Welfare, 1976 (DHEW Publication No. (HRA) 76-14013).

This is the first in a series of monographs for health planners. The original purpose of the study was to describe, for five states in the U.S.A., the general characteristics of health manpower planning activities being carried out, and the organizational, procedural and substantive relationships between the various planning activities which might relate them to a system for health manpower planning in each state. The monograph provides definitions of the concepts used, describes the basic components of the planning process, presents the details of the six steps and describes selected strategies used by health planners to maximize their available resources.

15. Aspen Systems Corp., ed. *Methodological approaches for determining health manpower supply and requirements*. Vol. I: *Analytical perspectives* (DHEW Publication No. (HRA) 76-14511, 74 pp.); Vol. II: *Practical planning manual* (DHEW Publication No. (HRA) 76-14512, 197 pp.). Washington, D.C., U.S.A., Department of Health, Education and Welfare, 1976.

This publication provides a detailed description and evaluation of methodologies used to determine present and future health manpower supply and requirements, including questionnaire samples, selected tables useful for estimating health manpower requirements and supply in the U.S.A., and a bibliography.

Steps to be taken in all manpower studies include: defining the problem, defining the manpower to be measured, determining the relevant labour market and medical service area of the study, determining the time period, formulating the assumptions regarding the future in terms of the total environment, identifying the precise information needed and investigation of secondary data, selection of methodological techniques to be used for collecting primary data and for statistical analysis, and cross-checking computations and evaluating accuracy. Studies may be generally classified as census of target population, sample survey, economic model building, data analysis, or eliciting the opinions of experts (the Delphi method).

16. Badgley, R.F. *et al*. International studies of health manpower: a sociologic perspective. *Medical Care*, 9(3): 235-252 (1971). (American Public Health Association, E. Washington Square, Philadelphia, PA 19105, U.S.A.)

Most health manpower studies undertaken prior to the publication of this article were little more than methodologic exercises, yielding limited insights into the complexities of the social issues with which they dealt. The authors' alternative is to regard the health system as a social structure with consistent modes of interaction. This framework can then be applied to available data on membership in occupational groups, group structure, roles, socialization and recruitment, incentives and career mobility, etc. Insufficient attention has been given to studies of the division of labour, status, accommodation and conflict, power elites and workers' role perceptions. Since simple study procedures cannot resolve the persistent problems of shortage, maldistribution and inefficient use, the authors propose that a complementary sociologic analysis be used to analyze each situation for a comparative perspective on how a particular problem may have been tackled in another context.

17. Baker, T.D. Health manpower planning. In: Reinke, W.A., ed. Health planning: qualitative aspects and quantitative techniques. Baltimore, Maryland, U.S.A., Johns Hopkins Press, 1972 (pp. 179-198).

Health manpower planning is a means of trying to ensure sufficient health workers to meet, but not exceed, future economic demands, according to the author's definition. Planning is essential since training takes time. An analytic framework was developed for health manpower planning after being put into practice in studies carried out by Johns Hopkins University's Department of International Health in Taiwan, Turkey, Peru and Nigeria. The framework included: (1) supply analysis; (2) analysis of projected supply; (3) analysis of effective economic demand for services; (4) analysis of projected demand; (5) estimation of worker productivity; (6) analysis of the anticipated gap between future supply and future demand; and (7) constraints that will limit any recommendations.

18. Bui Dang Ha Doan, ed. Manual on health manpower statistics. Geneva, World Health Organization, 1980.

This manual is aimed at giving basic knowledge to health administrators and planners on manpower statistics and to statisticians on specific issues of health manpower intelligence and management. It is composed of ten chapters: (1) objectives and scope of health manpower statistics; (2) delimitation and classification of health manpower; (3) collection of statistical data on health manpower; (4) statistical data processing; (5) principles of presentation and use of statistical series; (6) analysis of health manpower size and structure; (7) analysis of health manpower activity; (8) estimation of health manpower requirement; (9) estimation of health manpower future supply; and (10) longitudinal analysis of working life development and career prospects.

19. Donabedian, A. Aspects of medical care administration: specifying requirements for health care. Cambridge, Massachusetts, U.S.A., Harvard University Press, 1973 (649 pp.).

This volume, the first of two, is divided into five large sections devoted to: (1) social values, (2) programme objectives, (3) assessment of need, (4) assessment of supply, and (5) estimating requirements for services and resources. Each chapter is followed by references categorized by subject headings. The principal purpose of the book, in the author's words, is to "bring about a fundamental understanding of the phenomena in question and to foster a particular way of thinking about medical problems." The book comprises both a theoretical presentation and a review of important research.

20. Grundy, F. and Reinke, W.A. Health manpower requirements. In: World Health Organization, Health practice research and formalized managerial methods. Geneva, 1973 (Public Health Papers No. 5, pp. 154-164).

The authors are concerned here only with the numerical aspect of the problem of forecasting manpower requirements. The approach used is the method based on defined need, as ascertained professionally from health statistics and surveys. For purposes of illustration, the number of doctors required for personal health care services is considered. The calculations required to estimate present manpower requirements (the baseline), future, and recruitment requirements are outlined and areas of numerical uncertainty and conjecture are indicated. The chapter concludes with a discussion of the application of this forecasting method in the U.S.S.R.

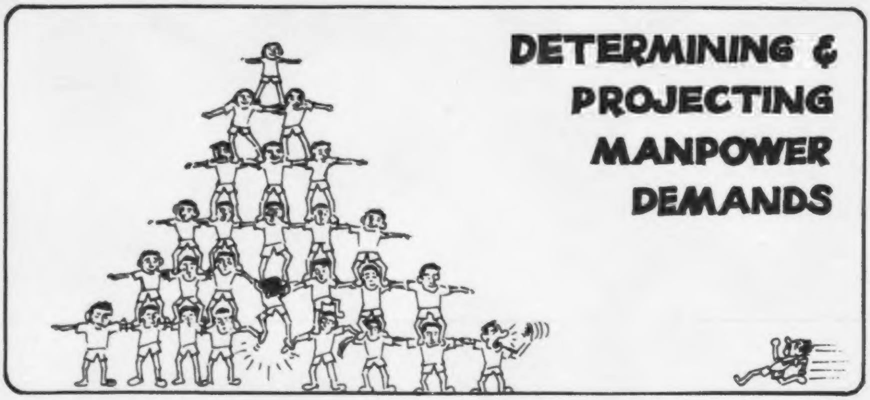
21. Hall, T.L. Health manpower in Peru: a case study in planning. Baltimore, Maryland, U.S.A., Johns Hopkins Press, 1969 (281 pp.).

Calculations of future requirements in Peru were based primarily on the concept of rationalized demand, which is analogous to the target-setting approach: the demand for health manpower is disaggregated into as many different components as possible, each is projected independently and then the components are re-aggregated to obtain the consolidated projection. Attention is given to organizational changes in the provision of health care as a means of improving the use of scarce resources. Mechanisms for improved manpower distribution among urban and rural areas are examined. Moderate and rapid growth models are projected. Organization of the planning structure itself is stressed and necessary preconditions outlined: a continuing data base, a permanent planning staff, a plan for political action, and a coalition of related interests.

22. Zhuk, A.P. Public health planning in the U.S.S.R. (Translated from the Russian language and reproduced in limited quantities by the Geographic Health Studies Program of the John E. Fogarty International Center.) Washington, D.C., U.S.A., Department of Health, Education and Welfare, 1976 (DHEW Publication No. (NIH) 76-999, pp. 239-258).

The author deals with public health planning as an inseparable part of the planning of the national economy. Chapter Nine discusses planning the medical personnel to support the public health network. The main index used in planning physician requirements and availability to the public is the number of physician posts. Within this framework the author examines in detail unavailability and demand, considers the attainment of a balance between the two, and concludes with a note on the training of paramedical personnel.

DETERMINING & PROJECTING MANPOWER DEMANDS



23. Bhatia, J.C. and Gandhi, H.S. Orienting doctors for rural health needs and services. Manpower Journal, (9)2:51-68 (1973). (Institute of Applied Manpower Research, Indraprastha Estate, Mahatma Gandhi Marg, New Delhi 110002, India)

India's primary health centre concept grew out of a set of recommendations enumerated by the Health Survey and Development Committee in 1946. The recommendations called for the establishment of a chain of health centres to provide the country's rural inhabitants with tax-supported curative and preventive services. Unfortunately, the task of interesting physicians in working in primary health centres is proving a difficult one; attempts to whet their interest in the practice of curative medicine under primitive conditions, health education sanitation campaigns, epidemiological and demographic surveys, etc., through the rural internship programme have only discouraged them from seeking rural employment. Since the success of the primary health centre complex depends upon the effectiveness of the physician in charge, the need to improve the services and image of the rural health centre is crucial. The authors suggest that medical education be reoriented toward rural health needs and that the specialty of social and preventive medicine receive the status and prestige it deserves. A "statistical supplement" includes a diagram of the administrative structure of the primary health centre, the type of staff it requires, the projected numbers of facilities and staff, and the financial resources needed for the next twenty years.

24. Fein, R. *The doctor shortage: an economic diagnosis*. Washington, D.C., U.S.A., Brookings Institution, 1967 (199 pp.).

Three basic points are presented in this widely-ranging monograph on the economic approach to projecting physician requirements: (1) physician manpower should be clearly distinguished from physician services; (2) the estimated increases in demand for physician services by 1975/80 will exceed the increase in supply of physicians; (3) the rising demand should be met by an increase in the productivity of physicians through better organization (group practice) and use of new types of personnel. The "shortage," therefore, is one of service and the crux of the problem is underproductivity. Rather than a diagnosis, what is actually presented is a prediction of future market situations based on existing and expected behaviour patterns. The author outlines the multiple considerations that must be taken into account in an attempt to apply economic analysis to the questions surrounding supply and demand of physician services. He chooses "health" as the output of medical care but does not specify which aspects of this output could be productively analyzed within the framework he proposes.

25. Gales, K. and Wright, R.C. *A study of manpower demand forecasts for the social services*. London, National Council of Social Service, 1966 (95 pp.). (26 Bedford Square, London WC 1, England)

Coordination of schemes for recruitment and training should be based on careful assessment of the total manpower needs of the social services in order that the best use is made of available resources. This is particularly relevant in a situation where functions and skills often overlap. It was such considerations which led to this study. While the forecasts themselves are out of date, the methodological problems which are met are still relevant and pose important questions.

26. Ghosh, B. *et al*. *Methodology and projection of requirement of specialists and super-specialists in health sciences in selected fields: Karnataka 1984 and 1989*. Bangalore, India, Indian Institute of Management, 1979 (123 pp.).

This is a report of the preliminary outcome of a large project on long-term perspectives of health manpower in the State of Karnataka, India. The report mainly discusses the methodologies for projection of manpower requirements and presents tentative forecasts of requirements for medical specialists and super-specialists in Karnataka in 1984 and 1989.

27. Grossman, M. *The demand for health: a theoretical and empirical investigation*. New York, National Bureau of Economic Research, 1972 (Occasional Paper No. 119, 115 pp.). (261 Madison Avenue, New York, NY 10016, U.S.A.)

The author constructs a model of the demand for the commodity "good health" (as opposed to medical care), on the premise that people, to some extent, choose their level of health. Variables such as age, schooling, income, lifestyle and price alterations are considered.

28. Hall, T.L. *et al*. Measurement and projection of the demand for health care: the Chilean experience. *Medical Care*, 13(6):511-522 (1975).

Some of the principal demand projection methods in use are reviewed, followed by a detailed description of the one adopted in the Chilean health manpower study. Elements of the study are: (1) a sample survey which measured the met and unmet demand for services as a function of six population variables; (2) a baseline demand projection which takes into account the probable effects of changes in these variables over ten and twenty years on the utilization of services; and (3) an alternative projection which postulates the fulfillment of certain targets for improvement of health care. The study did not seek to predict changes in the utilization of health services, but rather to provide a model which could be used to study the possible effects of alternative assumptions of sectoral growth and development on the utilization of health services and, by inference, on manpower requirements. The methods used warrant serious consideration in countries where planning resources are adequate to the task.

29. Scitovsky, A.E. and McCall, N. A method of estimating physician requirements. *Milbank Memorial Fund Quarterly*, 54(3):299-320 (1976). (Now *Health and Society*, 156 Fifth Avenue, New York, NY 10010, U.S.A.)

This article describes and applies a method of estimating physician requirements based on physician utilization rates of two comprehensive prepaid plans of medical care. The utilization of physicians by plan members is delineated by age and sex and by field of specialty of the physician. These results were extrapolated to the entire population of the U.S.A. On the basis of data for 1966, it was found that 34% more physicians than were available would have been required to give the entire population the amount and type of care received by the plan members. The "shortage" of primary care physicians was found to be considerably greater than that of physicians in the surgical specialties taken together (41% as compared to 21%). The paper discusses in detail the various assumptions underlying this method and stresses the need for careful evaluation of all methods of estimating physician requirements.

ESTIMATING MANPOWER
SUPPLY & MANPOWER
SURVEYS
TO HOSPITAL

30. Abel, P., Farmer, P., Hornby, P., Hunter, M.H.S. and Shipp, P.J. Practical manpower planning for nurses. Nursing Manpower Planning Report No. 2. Edinburgh, Scotland, Scottish Home and Health Department, 1974 (Report 34883).

The report is a guide to manpower planning techniques for nurse managers and personnel officers in the Scottish health service. It is intended primarily for use at the sub-national levels of hospital, district and groups of districts.

The report specifies what information should be collected on nursing staff and includes suggested pro-formas showing how it should be kept and analyzed. It also shows what calculations can be done using these analyses to forecast future staffing levels under a range of alternative policies. Two main types of forecast are covered: (1) comprehensive forecasts covering all nursing staff; and (2) more detailed forecasts covering special groups of staff. The calculations under each heading are set out step-by-step, using examples based on field studies undertaken by the authors.

31. Bui Dang Ha Doan. Women in the health professions. World Health Statistics Quarterly, 32(2):154-170 (1979).

During the 1960's, apart from a few cases, of which the most striking is that of physicians in the U.S.S.R., the proportion of women among pharmacists, dentists and physicians increased considerably in most developed countries. In most cases, the growth followed these patterns: (1) under the age of 35, women in health professions increased much more rapidly than men; (2) between the ages of 35 and 50, women in some cases declined less quickly than men, as a partial result of the returning to work of mothers once their children had grown up; (3) after the age of 50, women declined less quickly than men, partially as a result of greater male mortality. The proportion of females in health professions was not linked to the population-professionals ratio, nor to the over-all female activity rate. It was not linked to per capita income, but was directly affected by national health manpower policies and academic traditions. These were some findings from this statistical analysis based on data from 24 countries during the 1960's.

32. Johns Hopkins University. Johns Hopkins monographs in international health. Baltimore, Maryland, U.S.A., Johns Hopkins Press, n.d.

The Department of International Health at Johns Hopkins University undertook in 1961 health manpower surveys in Peru, Taiwan, Turkey and Nigeria. The objectives were to identify current supply and demand, to analyze the structure of the health and health education sectors, to project supply and economic demand, determine whether they are balanced, and suggest corrective measures for imbalances. The biologic demand technique was rejected as unworkable; other approaches implicitly rejected were functional analysis, cost-benefit analysis and determination of social priorities. The studies were intended to provide information to teachers and planners and to improve the methodology of investigation. The dominant assumption underlying these studies is an engineering idea of society that postulates that facilities can be distributed and planned for on a rational and predetermined basis.

33. Lave, J.R. et al. Medical manpower models: need, demand and supply. Inquiry, 12(2):97-125 (1975).

This is an excellent review, extensively documented, of the merits, limitations and applications of demand and supply methods in use. The authors propose a framework for the estimation and solution of manpower shortages and summarize the pertinent literature. In the light of limitations of the models reviewed, there is a need for a model which can measure output and use disaggregated data so it reflects individual consumer and physician preferences, while acknowledging that there are other ways of providing care. The literature on supply models and rural/urban choice is surveyed. Then the concept of a physician shortage is explored.

In their conclusion, the authors stress that, since governments have taken on the role of planning the delivery of care, they must define "need." Based on the criteria in the literature discussed, there is contradictory evidence on the overall shortage of physicians. The authors detail why they lack confidence in the current assumption that a shortage exists. Problems with maldistribution must not be interpreted as a shortage, but must be dealt with directly.

34. Mejia, A. _et al_. _Physicians and nurses migration: analysis and policy implications_. Geneva, World Health Organization, 1979 (476 pp.).

Four main topics are examined: (1) importance and directions of migrations of physicians and nurses in each geographical region of the world; (2) determinants of health personnel migration; (3) consequences of these migrations; (4) policy implications. Among the determinants of migration, the authors analyze, inter alia, the level of economic development, the imbalance between supply and demand, the national health expenditures, the irrelevance of the training system, the role of the language, the imbalance within the health team and the political context. As concerns consequences, losses and gains from an economic point of view are examined, then the migration effects are scrutinized for three groups of countries: the senders, the receivers and those which are both. A number of country monographs are presented.

35. Navarro, V. The under-development of health or the health of under-development: an analysis of the distribution of human health resources in Latin America. _International Journal of Health Services_, 4(1):5-27 (1974). (Baywood Publishing Co., 120 Marine Street, Farmingdale, NY, 11735, U.S.A.)

The maldistribution of human resources is brought about by the same determinants that cause the under-development of most of Latin America: (1) the cultural, technological and economic dependency of developing countries; and (2) the economic and political control of resources by special interest groups within the country, and their foreign counterparts. The author describes the uneven distribution of human health resources by type of health care, region, social class and sub-sector (private and public).

36. Paredes, R. and Mejia, A. The Colombian study of health manpower and medical education. In: Badgley, R.F., ed. *Round table on social science and health planning: culture, disease and health services in Colombia*. New York, Milbank Memorial Fund, 1968 (pp. 34-42).

The authors provide an overview of the study of health manpower in Colombia that began in 1964. The general objectives were: (1) determination of needs and demands; (2) determination of health manpower required; (3) determination of modifications required in education; and (4) development of a methodology applicable to other Latin American countries. The study was a joint effort of the Colombian Association of Medical Schools and the Ministry of Public Health. This review article describes features of the applied study methodology and the development of operations: the National Health Survey, and surveys of health personnel, health care institutions, educational institutions and socio-economic conditions.

37. Simeonov, L.A. *Better health for Sri Lanka: report on a health manpower study*. New Delhi, World Health Organization Regional Office for South-East Asia, 1975 (Document SEA/PHS/149, 315 pp.).

The publication of this book filled a gap between individual case studies and efforts to formalize a theory of health manpower planning. It was intended to show a middle way in the application of planning concepts to a real situation. Therefore, the approach selected was more practical than academic. The report describes the National Health Manpower Study carried out by the government of Sri Lanka in 1971-73 in an attempt to improve the management of the health services. The study goals were to assist the government in formulating health policy and to define the aims and priorities of the activities necessary for job definition and task specification in estimating future manpower requirements. In addition, the study aspired to strengthen the statistical system and research practices and to promote integration of health activities and cooperation between health and educational institutions. The objectives were the following: (1) to determine the pattern of manpower utilization in order to identify the points of intervention for the improvement of productivity, and to re-define roles; (2) to determine present needs and demands in order to project future manpower requirements; and (3) to initiate the process of re-defining educational goals. Chapter Five provides detailed information on the existing health manpower system. Chapter Eight discusses the health manpower implications of alternative policy options, thus leading to a re-definition of roles and a consideration of the problem of demand for manpower in the future. The concluding chapter describes the effects of the study on national policy and poses certain questions: (1) did the study achieve its objectives, and at what cost? (2) was the strategy appropriate? and (3) what action next?

38. Taylor, C.E., Dirican, R. and Deuschle, K.W. *Health manpower planning in Turkey: an international research case study*. Baltimore, Maryland, U.S.A., Johns Hopkins Press, 1968 (300 pp.).

The concept employed in this study was that of technically feasible demand, or "concentrating on the political and administrative machinery to provide the concentrated effort to achieve otherwise feasible and realistic goals." Three straight-line projections for physicians, nurses and midwives focused solely on supply. Several approaches to increasing supply are considered: improved distribution and productivity, substitution, re-organization of health services and the educational system. Attempts are made to quantify economic demand; and projections are based on ratios, targets and manpower standards.

UTILIZATION
OF
STAFF

39. Butter, I. *et al*. Effects of manpower utilization on cost and productivity of a neighbourhood health centre. *Milbank Memorial Fund Quarterly*, 59(4):421-452 (1972).

This paper describes the design of an information system and the gathering of data for evaluating manpower utilization. The purpose of the study was twofold: to produce information describing how manpower is utilized, and to explore potential uses of the data as tools for decision-making and instruments for achieving change. The study concentrated on procedures for initiating the goal-setting process, developing performance measures, comparing actual performance to performance criteria, and examining alternate courses of action. The most obvious shortcoming was the use of visits as the only output measure. It would have been desirable to measure the service content of visits as well as the number and kinds of health problems alleviated. Moreover, preventive and educational activities not only fail to produce visits but aim to reduce visit volume. Thus the task of developing output measures must be pursued. The authors conclude that an information system designed to expose problems is not sufficient to effect improvements. Further prerequisites may include incentives for performance improvement, pressures for financial self-sufficiency, and community participation in the planning process.

40. Fendall, N.R.E. Auxiliaries in health care: programs in developing countries. Baltimore, Maryland, U.S.A., Johns Hopkins Press, 1972 (200 pp.).

With proper health planning, organization and management, auxiliary personnel can be utilized successfully to contribute to the quantitative and qualitative delivery of medical care. This book provides information on the need for auxiliary personnel, their potential availability, the possibilities for training them, and their successful utilization. It is intended for use by health planners and administrators, qualified practitioners, and teachers and supervisors of auxiliaries. The first chapters discuss the classification of auxiliaries according to education and duties, the activities of "sub-professional schools of medicine" located around the world, epidemiological data from developing areas, and the present distribution of health manpower and future requirements. Each subsequent chapter deals with a specific classification of auxiliary to illustrate utilization within the framework of the major field of interest and activity. The concluding chapter is concerned with the general principles of selection, training, and utilization of auxiliaries.

41. International Development Research Centre. Low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries. Ottawa, Canada, IDRC, (Vol. 1) 1975, (Vol. 2) 1976, (Vol. 3) 1977, (Vol. 4) 1978, (Vol. 5) 1979.

The literature abstracted focuses primarily on new models of health care delivery, and on the training and utilization of auxiliary workers. It is intended to be of use to organizations involved in the planning and staffing of rural health systems. The five broad sections into which entries have been arranged are: (1) reference works, (2) organization and planning, (3) primary health care implementation, (4) primary health manpower training and utilization, and (5) formal evaluative studies. Section Four, on the training and use of health manpower, is categorized in the following manner: primary medical care, both professional and lower- and middle-level health workers; primary nursing, family planning and midwifery, dental and laboratory care, professional and non-professional primary environmental health; and teaching aids. Included in this section is a wide range of materials on all aspects of manpower utilization and development, such as the team approach, medical education's responsibility and objectives and integration of educational programmes with related community programmes.

42. Kohn, R. and White, K.L., ed. *Health care: an international study. Report of the WHO/International Collaborative Study of Medical Care Utilization*. London, New York and Toronto, Oxford University Press, 1976 (557 pp.).

The WHO/ICS-MCU study aspired to an unbiased and objective assessment of global utilization of health care services, both institutional and extramural. The authors sought to dispel the notion that the organization of health care is governed solely or even predominantly by local or national traditions. They hoped, instead, to encourage the development of generic principles based on information that permits objective comparison.

The study was directed at three broad questions: (1) to what extent are differences in the organization of health care and its resources reflected in differences in the use of health services? (2) what behavioural and social factors influence patterns of use in different regions? and (3) what methodological problems must be overcome before valid statements can be made regarding patterns of use in different regions?

A consortium of research groups collaborated in such a way that uniformity in methods and comparability of results were achieved without compelling the particular groups to relinquish their own objectives. The central task of the research was an international household interview survey of almost 48 000 respondents, representing over 15 million people. The findings are presented on two levels: (1) analysis of the data and interpretation, as "plausible and reasonable inferences" are necessary when dealing with political and social philosophies; and (2) their effect on health care.

The first part of the book discusses the theoretical orientation and methods of the study; the second examines the determinants of health services use; the third investigates the use of health services; and the fourth provides a summary. At the end of each section are extensive references and among the appendices is a list of publications connected with and based on data from the study.

43. Segall, A.J. et al. Systematic course design for health fields. New York, John Wiley, 1975 (406 pp.).

This textbook provides a systematic approach for developing courses that are relevant to the future professional needs of the students. It is divided into four units: (1) an overview of procedures and concepts; (2) problems likely to be encountered in implementing the course design model; (3) alternative implementation methods and techniques (including annotated bibliographies); and (4) step-by-step guidelines for performing each task in the course design model. In order to develop instruction that will be relevant to student needs, it is essential to identify the professional roles that students will assume after completing their training and what constitutes effective performance within these roles.

44. Spitzer, W.O. et al. Nurse practitioners in primary care: development of the Utilization and Financial Index to measure effects of their deployment. Canadian Medical Association Journal, 114(12):1099-1102 (1976). (1867 Alta Vista Drive, Box 8650, Ottawa K1G 0G8, Canada)

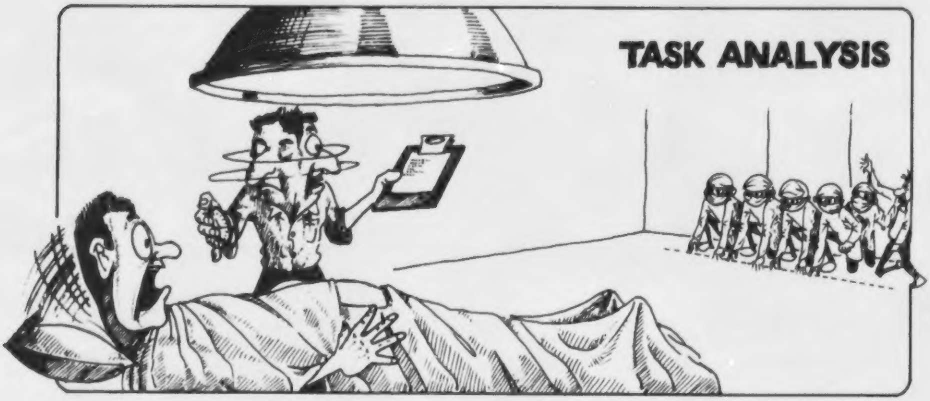
A new Utilization and Financial Index (UF-Index) was developed to measure the economic effects of deployment of new health professionals or of other changes in the provision of health services. By means of several steps, information on concurrent use of various categories of health service is converted into a single quantitative index. The index has been used to evaluate the financial effects of introduction of nurse practitioners into primary care practices by means of two complementary studies.

45. Stephen, W.J. An analysis of primary medical care: an international study. New York, Cambridge University Press, 1979 (401 pp.).

This book examines the structure and organization of primary care in several countries. It was written by a British general practitioner and based upon a review of the literature and visits to the countries. The countries reported on are the United Kingdom; the European Economic including Belgium, Denmark, France, the Federal Republic of Germany, the Republic of Ireland, Italy and the Netherlands; Scandinavia, including Finland, Norway and Sweden; the U.S.S.R.; Eastern Europe, including Bulgaria, Czechoslovakia and Hungary; the U.S.A.; and Japan. Also included is a chapter on primary care in Australia, New Zealand and Canada by Eric Gambrill. In addition, the author discusses poverty, medical care and politics in developing countries, in general, and the organization of primary care in Chile and Cuba, in particular. Topics given special attention in the summary chapter are: (1) demands, needs and resources; (2) the relationship between spending and health; (3) medical education; (4) the need for organization and planning; (5) the use of resources; (6) requirements for sound primary care; (7) the family physician; (8) the relationship between general practitioners and hospitals; (9) registration of patients; (10) methods of physician reimbursement; (11) monitoring, evaluation and audit; and (12) quality of care. The book contains tables and references.

46. World Health Organization. Training and utilization of auxiliary personnel for rural health teams in developing countries: report of a WHO Expert Committee. Geneva, 1979 (WHO Technical Report Series No. 633, 35 pp.).

This report is primarily devoted to primary health care in rural areas of developing countries and its staffing problems. In this perspective is developed the concept of rural health teams and the national strategy for it. A large part of the report is devoted to the problems of training rural health workers.



47. Abel, P., Farmer, P. and Shipp, P.J. National nursing manpower policies in Scotland. Nursing Manpower Planning Report No. 1. Edinburgh, Scotland, Scottish Home and Health Department, 1974 (Report 34884).

This report develops a machinery for allowing senior health officials to consider the likely impact on nurse staffing growth rate of adopting different recruitment policies. The authors construct a simple simulation model using existing service data and demonstrate, for a number of cases, how the simulation reveals new trends and likely outcomes. The model is intended for use by health personnel who are not specialists in the field of simulation.

48. Golden, A.S. Task analysis in health manpower development and utilization. Medical Care, 13(8):704-710 (1975).

Job analysis and task analysis are systems methods which examine the functions of individuals and allocate these functions into job descriptions which can make for a better utilization of health manpower by a re-structuring of the jobs and a re-structuring of curricula as a reflection of jobs. This methodology was applied to the education of a non-physician family health team for an inner-city prepaid comprehensive health centre, and to staff development at a health maintenance organization. It also served as the basis for the curriculum of an associate degree physician's assistant programme and a baccalaureate degree health associate programme. Among the advantages for the application of this method are the inter-relationship of resulting jobs rather than isolation, and career mobility in both the work situation and curricula. Constraints include the lack of entry level jobs and the traditional attitudes of educational institutions on basic requirements. References are included.

49. Johns Hopkins University, Department of International Health. The functional analysis of health needs and services. New York, Asian Publishing House, 1976 (292 pp.).

This volume is the outcome of a study conducted in India and Turkey on the development of a methodology for the assessment of health needs and services in functional terms. The first of four parts introduces the functional analysis approach and its rationale. The next two chapters deal with the methodology and findings from the community and health services perspectives. Among the subjects discussed are the household interview format and findings in India, practical field considerations, the health resources base, findings from the analysis of work sampling in India, and cost accounting of health centre expenditures and health centre operations. The concluding chapter summarizes the product of the research and examines topics such as the routine application of the functional analysis approach, the functional information generating system, the illustrative calculations of health needs, the data collection scheme, data analysis for total evaluation of services, potential application of functional analysis, etc. The book provides a useful informative manual for development of methods in the analysis of health needs and services.

50. Kissick, W.L. Effective utilization: the critical factor in health manpower. American Journal of Public Health, 58(1):23-29 (1968). (American Public Health Association, 1015 18th Street, N.W., Washington, D.C., U.S.A.)

Organization and financing are the mechanisms that translate human resources into health services; therefore, the level of output depends on how inputs are used. The author discusses the problem of over-utilization of unqualified personnel due to lack of capital to hire qualified personnel. The need is for teams headed by highly-trained physicians. He presents the idea of the "theory-skill spectrum," developed by Robert Kinsinger, whereby academic and experience equivalents common to several levels of functioning can be measured, along with measurement of the capacity for independent action; both are prerequisites to downward transfer. Several barriers to changes in utilization patterns are: (1) consumer expectations; (2) provision of services according to ability to pay rather than need; (3) health profession conservatism; (4) criteria for certification; and (5) economic vested interests.

51. Nelson, E.C. et al. A study of the validity of the task inventory method of job analysis. Medical Care, 13(2):104-113 (1975).

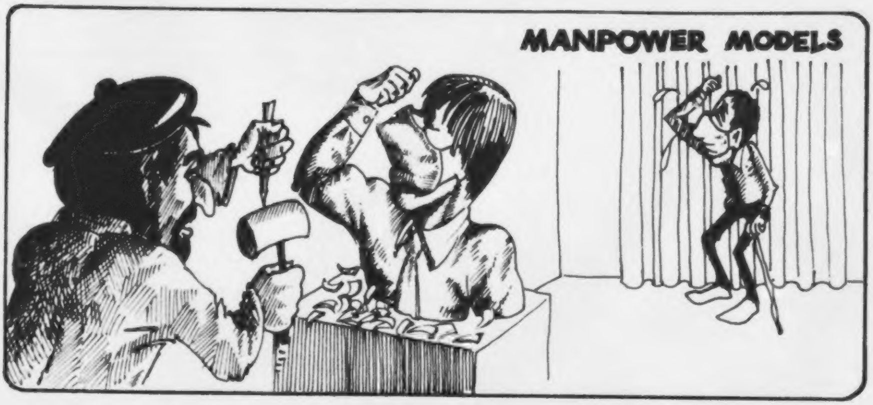
The conclusion of this study was that task inventory technique -- retrospective self-reporting -- is insufficient when used alone. The study compared the data produced by this method with the data from trained observers and concluded that neither technique is substitutable for the other.

52. Rafferty, J., ed. Health manpower and productivity: the literature and required future research. Lexington, Mass., U.S.A., D.C. Heath, 1974 (Lexington Books) (225 pp.).

This is a collection of seven papers dealing with health manpower productivity. The Feldstein paper deals with productivity in dental care; the others examine productivity in the provision of medical care. The paper by Reinhardt and Smith presents production functions and activity analysis, whereas Sloan's paper studies effects of incentives on the individual physician as the size of the medical practice varies. The paper by Sheffler draws attention to the valid distinction between productivity comparison in different settings and economies of scale which pertain to variation in physical productivity. The papers by Golladay and Frech deal with potential sources of productivity gains that have not yet been treated in the health economics literature, patient participation, occupational licensure, etc. The Hadley paper is a general overview.

53. Watson, E.J. Meeting community health needs: the role of the medical assistant. WHO Chronicle, 30(3):91-96 (1976).

At a seminar on medical assistants organized by the WHO Regional Office for the Western Pacific in Manila, participants discussed the benefits of utilizing auxiliary health personnel in rural communities in order to combat maldistribution of health services. The author raises the key issues to be considered: (1) the kinds of personnel needed; (2) task analysis (including task analysis in relation to training); (3) cost-benefit aspects; (4) re-training versus development of new workers; (5) diagnostic methodology; (6) job satisfaction; (7) evaluation of health work; and, closely related to the last, (8) continuing motivational input and training.



54. Gupta, I. et al. Hospital manpower planning by use of queueing theory. Health Services Research, 6(1):76-82 (1971). (Hospital Research and Educational Trust, 840 N. Lake Shore Drive, Chicago, Ill. 60611, U.S.A.)

This study illustrates the practical application of queueing theory to a simple problem in manpower planning: how large a staff is required to give adequate service from a hospital messenger unit? The recommended reduction in manpower -- from eleven to six -- resulted in a saving of close to $25 000 per year.

55. Kramer, L.M., ed. Conference on a health manpower simulation model: proceedings and report. Vol. 1: Conceptualization of a health manpower simulation model. Vol. 2: Methods for building a health manpower simulation model. Washington, D.C., U.S.A., Department of Health, Education and Welfare, Division of Manpower Intelligence, 1970 (208 pp. and 130 pp.).

The U.S. Bureau of Health Manpower Education contracted in 1969 for two pilot studies in the development of models of health manpower. One, with the Human Resources Research Center at the University of Southern California, was to conceptualize a model; the second organization, the Research Triangle Institute, was to concern itself with model building methods. The first volume is devoted to the U.S.C. project. The concepts of modeling and simulation are clearly explained; then follows a detailed description of the Mark I micro-simulation model: the health services, health manpower and health education modules. Interaction between the three modules is discussed and possible uses of the model in terms of simulating the effects of policy changes reviewed. Volume Two describes two models: one simulating demand for hospital care, and the other generating the hospital manpower requirements consistent with the care requirements generated by the first model. (For details of the manpower requirements model, see the next entry, number 56.)

56. Research Triangle Institute. Simulation of hospital utilization and health manpower requirements. Vol. 1: Development of simulation models. Washington, D.C., U.S.A., Bureau of Health Manpower Education, National Institutes of Health, 1972 (Technical Report No. 1, 199 pp.).

Part Four of this volume presents a hospital manpower model which was developed to forecast manpower requirements. Consideration was given to utilizing information provided by the POPSIM and Hospital Utilization models, and much of the forecasting ability of this model is attributable to their use. The appendix provides a general discussion and survey of the background, validity, methodology and difficulties of forecasting models.

57. Shuman, L. et al. Manpower mix for health services: a prescriptive regional planning model. Health Services Research, 6(2):103-119 (1971).

A model is formulated to determine the mix of manpower technology needed to provide health services of acceptable quality at a minimum total cost to the community. Total costs include both the direct costs associated with providing the services and with developing additional manpower and the indirect costs (shortage costs) resulting from not providing needed services. The model is applied to a hypothetical neighbourhood health centre, and its sensitivity to alternate policies is investigated by cost-benefit analysis. Possible extensions of the model to include dynamic elements in health delivery systems are discussed, as is its adaptation for use in hospital planning.

58. Vector Research, Inc. A health manpower model evaluation study. Vol. 1: An analysis of health manpower models. Vol. 2: An inventory of health manpower models. Washington, D.C., U.S.A., Department of Health, Education and Welfare, 1974 (DHEW Publication No. (HRA) 75-19, 210 pp. and 347 pp.).

This two-volume report includes a detailed description of fifty-six health manpower planning models, and evaluation of the practical utility of these models and an in-depth analysis of two large-scale models developed for the U.S. government under contract.

ORGANIZATION OF MANPOWER PLANNING

59. Andrade, J. Participation and responsibilities in health manpower planning: the case of Venezuela. Washington, D.C., U.S.A., World Health Organization Pan American Health Organization (PAHO), 1973 (Document HR/CPP/D/6, 9 pp.).

The author illustrates the areas of overlap between the three sectors involved in health manpower planning: national planning, health, and education. He describes the functions, responsibilities and relationships of a new Venezuelan government department created in 1972. As planning responsiblity can be lost among the complex inter-relationships of the sectors involved, it is imperative that one specific unit possess the necessary authority and resources to develop and implement plans, conduct data research, develop planning and training techniques, maintain continuity, ensure cooperation, and attempt to withstand political and other pressures.

60. Gish, O. *Planning the health sector: the Tanzanian experience*. London, Croom Helm, 1975.

This book describes the period following a major governmental change in Tanzania in 1972, during which a new health plan to the year 1980 was developed. Chapter Four discusses the staffing of the health services. Specific output targets were decided upon in keeping with the financial possibilities of expanding the health services to the whole of the population. The targets represent a substantial expansion of the rural health cadres, an expansion made possible primarily because of the constraint that had been placed upon increase in hospital beds and their related staff. As the entire volume of manpower output was determined in keeping with the overall economic possibilities, any expansion of one cadre would have to be compensated for from another group. The output targets are discussed in relation to the training required to achieve them. The author compares the education, training and employment costs of different levels of medical practitioners, and the determinants of selecting training programmes which will produce the desired manpower output.

61. Shipp, P.J. *Manpower planning in the Scottish National Health Service*. London, Institute for Operational Research, 1971 (Health Report No. 5, 33 pp.). (Now Centre for Organisational and Operational Research (COOR), Tavistock Centre, Belsize Lane, London NW3 5BA, England)

This report is a condensation of five seminars held to consider setting up a separate health manpower planning unit to advise the Scottish Home and Health Department (SHHD). The SHHD should develop a manpower planning system as a framework which could be used by the appropriate SHHD staff (the personnel function) to examine what is happening within the National Health Service (NHS) (the manpower process) and evaluate the consequences of alternative policies. The report discusses the nature of those functions; Appendix A describes a possible initial programme of work for a manpower planning unit; and Appendix B presents a brief survey of nurse staffing in Dumfries.

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